THE AMERICAN
JOURNAL OF PHARMACY.

OCTOBER, 1875.

THE TWENTY-THIRD ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The new Odd Fellows' building on Tremont, corner of Berkeley street, Boston, Mass., had been secured by the Local Secretary and the Local Committee of Arrangements for the use of the American Pharmaceutical Association, at its twenty-third annual meeting. The sessions were held in Covenant Hall, and were well attended, the hall being crowded at the opening of the meeting, about four hundred persons being then present. Adjoining the ante-room were two or three spacious apartments for the use of committees and members, the spacious and well-lighted hall in the upper story being used for the exhibition, and, in an adjoining large hall, dinner was served between the morning and afternoon sessions, for those members who were desirous of being in attendance promptly at the opening of the next session.

First Session—Tuesday afternoon, September 7th.

Shortly after the appointed time, 3 o'clock P. M., the meeting was called to order by the President, Prof. C. L. Diehl, of Louisville, Ky., who appointed Messrs. J. D. Wells, of Cincinnati; Charles Bullock, of Philadelphia, and G. J. Luhn, of Charleston, S. Carolina, a Committee on Credentials. After the Committee had retired to attend to their duty, the President delivered his annual address, which was mainly devoted to scientific matters. Referring briefly to the scientific labors of pharmacists in the past, he pointed out the changes that have taken place in the relation of pharmacy to general science, that many chemicals which were formerly prepared in the pharmacist's laboratory are now made pure and at a less cost, on a large scale, and that, as a consequence, the pharmacist directs his attention to the determination of the purity of the purchased articles, and to the preparation of galen-

icals. In the execution of these duties, new and interesting veins of information are often discovered, and no better refutation of the charge of retrogression in pharmacy need be adduced than the annually increasing activity among pharmaceutical writers, whose writings, while they often do not possess high scientific value, nevertheless give abundant evidence of improvement in the standard of the profession.

Alluding to the progress made in the various branches of pharmacy, President Diehl reviewed the introduction of jaborandi into medicine, gave an interesting historical sketch of the investigations concerning digitalin and its derivatives, to which the activity of digitalis is due, and spoke of the discovery of the artificial production of salicylic acid and its antiseptic properties. Prof. Diehl referred then briefly to the by-laws of the Association, and suggested some modifications, prominent among which was the recommendation to permit a wider scope in the selection of subjects for the President's annual address, to unite the two committees on the drug market and on adulterations into one, and to create a committee for the examination of all papers previous to publication, and with the power to refer back to the author for modification any paper, or portion of such, which may be deemed objectionable.

The address was listened to with close attention, and greeted with applause; on motion, the suggestions contained therein were referred to a special committee for further consideration and report. Messrs. Paul Balluff, of New York; N. H. Jennings, of Baltimore, and J. L. Lemberger, of Lebanon, Pa., were appointed on this committee.

Mr. Bullock, on behalf of the Committee on Credentials, reported the following societies to be represented by duly accredited delegates: the Colleges of Pharmacy of Philadelphia, New York, Cincinnati, Massachusetts, Maryland, Louisville, Ontario, Washington, D. C., (National) and Tennessee; the Alumni Associations of the Colleges of Pharmacy of Cincinnati, New York, Philadelphia (New York Association), Massachusetts, Philadelphia and Maryland; the Literary and Scientific Society of German Apothecaries of New York; the Pharmaceutical Associations of Newark, Camden county, New Jersey, New Hampshire, Rhode Island, Vermont, Richmond and Tennessee. The credentials of the delegations from the Pharmaceutical Association of the Province of Quebec and the Chicago College of Pharmacy, were received at subsequent sessions.

At the first call of the roll, 117 members answered to their names.

The Executive Committee reported the names of 103 candidates for membership, who were duly recommended. Among the candidates was Prof. S. P. Sharples, State Assayer at Boston and Professor of Chemistry in the Boston Dental College, against whose eligibility under the clauses contained in Article I, Chapter VII of the By-laws, objection was raised, Prof. Sharples being neither a pharmacist nor a teacher in a college of pharmacy. After some discussion, his name was temporarily withdrawn by the Executive Committee, and a ballot ordered to be taken on the remaining applicants, Messrs. E. T. Dobbins and C. S. Eastman acting as tellers and reporting their election. Prof. Sharples' application was now laid before the meeting, when, after some discussion, the President decided that under the clause declaring the eligibility of "those teachers of Pharmacy, Chemistry and Botany, who may be especially interested in Pharmacy and Materia Medica," the applicant was eligible to membership. The ballot resulted in 74 affirmative and 26 negative votes; two-thirds of the votes being necessary for an election, Prof. Sharples was declared duly elected.

Subsequently, Prof. Bedford gave notice that he would move an amendment to the By-laws, restricting the eligibility of teachers to "teachers in colleges of pharmacy."

Invitations were received from the Mercantile Library Association, tendering the free use of their rooms, and from Orlando Tompkins, Esq., proprietor of the Boston theatre, inviting the members and ladies to visit this place of amusement on Thursday evening; accepted, with thanks.

The reports of standing and special committees being called for, reports were presented from all but the Committees on Drug Market, on Liquor-dealers' License and on Infringement of Stamp-tax. The Business Committee and the Permanent Committee on the Pharmacopœia had no reports to present.

The Committee to nominate officers and standing committees for the ensuing year was then appointed, by naming one representative from each delegation of the Colleges and Societies named above, whose credentials had been received, as follows: Thos. S. Wiegand, Frederick Hoffmann, J. D. Wells, S. M. Colcord, Wm. S. Thompson, E. Scheffer, E. Gregory, Chas. Becker, B. Lillard, A. W. Bain, T. F. Main, H. S. Wellcome, J. F. Babcock, R. V. Mattison, E. W. Russell, P. F. Lehlbach, Chas. H. Dalrymple, A. P. Brown, R. W. Gardner, C. A. Tufts, A. L. Calder, L. E. Sherman, T. R. Baker

and J. Thomas, Jr. In addition to these, the following appointments were made from the Association at large: H. W. Masi, of Norfolk, Va., Jos. L. Lemberger, of Lebanon, Pa., G. J. Luhn, of Charleston, S. C., G. W. Berrian, Jr., of North Andover, Mass., and Joel S. Orne, of Cambridgeport.

The Chair appointed also the following committee on Specimens: Jos. Roberts, of Baltimore, E. H. Doolittle, of Boston, A. S. Lee, of Raleigh, N. C., P. E. Dupuy, of Richmond, Va., and Geo. Leis, of Lawrence, Kan.

A motion to adjourn until Wednesday morning, at 9 o'clock, was then carried.

Second Session—Wednesday morning, September 8th.

The Minutes of the first session were read and approved, after which Mr. Wiegand, on behalf of the Nominating Committee, reported the following nominations for officers and standing-committees for the ensuing year:

President—Professor George F. H. Markoe, of Boston.

Vice-Presidents—Fred. Hoffmann, of New York, T. Roberts Baker, of Richmond, Va., C. F. G. Meyer, of St. Louis.

Treasurer—Charles A. Tufts, of Dover, N. H.

Permanent Secretary—Professor John M. Maisch, of Philadelphia.

Reporter on Progress of Pharmacy—Prof. C. Lewis Diehl, of Louisville, Ky.

Executive Committee—George W. Kennedy, Pottsville, Pa., Joseph L. Lemberger, Lebanon, Pa., William McIntyre, Philadelphia, Charles A. Heinitsh, Lancaster, Pa., John M. Maisch, Permanent Secretary, *ex-officio*.

Committee on Papers and Queries—William Saunders, Ontario, Canada, Emil Scheffer, Louisville, Ky., James H. Taylor, New York.

Business Committee—Jacob D. Wells, Cincinnati, Paul Balluff, New York City, William C. Bakes, Philadelphia.

No nomination for the Committee on Drug Market was made, as a special committee was considering the propriety of merging it with the Committee on Adulterations, in accordance with the suggestion of President Diehl.

A ballot having been ordered for President, Messrs. Lehlbach, of New York, and Sharples, of Boston, were appointed tellers, and reported the election of Prof. Markoe as President for the ensuing year. The remaining officers and committees were then elected by an affirmative ballot of the President, in compliance with the unanimous vote of the Association.

Messrs. W. J. M. Gordon, of Cincinnati, and S. M. Colcord, of Boston, were appointed a Committee to conduct the President-elect to the chair. Prof. Markoe not being in the Hall, the first Vice-President, Dr. Fred. Hoffmann, took the chair, expressing his thanks for the honor conferred.

The report of the Executive Committee, which was read by the Chairman, G. W. Kennedy, referred to the early publication of the "Proceedings" for 1874, which were embellished with the portrait of the late Professor Procter; steps had been taken to procure for the next volume the portrait of the late Prof. Edward Parrish.

Since the organization of the Society there had been a total membership of 1,697; lost by death, 136; dropped for various causes, 477; resigned, 101, leaving a balance of 983. The total number of honorary members was thirty, of whom ten had died.

The report closed with obituary notices of the former Presidents of the Association, W. B. Chapman, of Cincinnati, and John Milhau, of New York; of one former Vice-President, Thomas Hollis, of Boston; the following members, Hugo Hensch, of Cleveland; A. P. Melzar, of Wakefield, Mass.; Isaac Coddington and Andrew J. Tully of New York; William Brown, of Boston, and Thomas A. Lancaster, of Philadelphia; and of the honorary members, M. J. Bailey, of New York, and Daniel Hanbury, of London, England.

The President-elect having arrived, was formally presented to the Association, and after expressing his thanks, took his seat.

The report of the Permanent Secretary which was afterwards read, gave an account of some causes of delay in issuing the Proceedings, referred to the changes in arranging the material, and discussed various matters connected with the next annual meeting. Correspondence in relation to the intended participation in framing an International Pharcopæia was now in progress. It was recommended that, aside from the general invitation extended to all pharmacists through the International Pharmaceutical Congress to meet with this Association in 1876, in Philadelphia, the officers be directed to correspond with the various national and local pharmaceutical societies upon this subject; that a Committee of Arrangements be appointed with power to act upon the basis of the committee's report presented in 1873, that in view of the Centennial Exposition in 1876, no exhibition be held in connection with the next meeting except for such articles which may be needed for illustrating papers to be read; and that the various pharmaceutical soci-

eties throughout North America be invited to form committees with the view of facilitating the objects of pharmacists and chemists from foreign countries who may desire to travel upon this continent. After referring to the stock of Proceedings on hand, and to the incidental expenses during the past year a brief abstract was given of the paper on American Pharmacy and its relations to public health, which the Secretary had been invited to read before the American Public Health Association at its meeting held in November 1874. (*See* "American Jour. Pharm." 1875, p. 43.")

Mr. R. V. Mattison read the Report of the Committee on Unofficinal Formulas. The report containing also formulas for some Elixirs, the latter were referred to the Committee on Formulas for elixirs, and the remainder accepted for publication, it being understood that these formulas were gathered and printed for convenience of reference merely, without being endorsed by the Association.

The Treasurer's report, which was now read, showed receipts during the year amounting to $5,690.19, including the balance of $918.22 on hand at the previous meeting; the disbursements amounted to $4,516.08, leaving at this time a balance of $1,174.11 in the hands of the Treasurer. An Auditing Committee consisting of James T. Shinn, of Philadelphia, W. J. M. Gordon, of Cincinnati and P. E. Dupuy, of Richmond, Va., was appointed, and, at a subsequent session, reported the accounts of the Treasurer correct.

Dr. A. W. Miller, Chairman of the Committee on Adulterations and Sophistications, read the report of that Committee, which exposed several frauds hitherto not reported; among them may be mentioned the facts that the oils of cedar, hemlock and spruce are largely distilled in New Jersey with variable quantities of turpentine; that some German houses are mixing and cheapening the more prominent essential oils; that a French firm in Grasse adulterates the cheaper grades of the oils of lavender, rosemary and thyme with about 75 per cent. of oil of turpentine; that French oil of almond is almost exclusively obtained from peach kernels; that honey is often manufactured by dissolving various sugars in a decoction of slippery elm bark, or a solution of gum and starch; that castor oil even is sometimes made of lard and croton oils, etc.

The Association afterwards paid the official visit to the exhibition-room and inspected the fine display of drugs, pharmaceutical preparations, chemicals, apparatus, perfumery, druggists' sundries, and collections of scientific and general interest.

Third Session—Wednesday afternoon, September 8th.

After the reading and approval of the records of the second session, a resolution was passed inviting the medical profession of Boston and vicinity to attend the sessions of the Association and visit the Exhibition-room at their convenience. Invitations were received, and thankfully accepted, for visiting the works of the New England Glass Company and the Merchants' Exchange.

The report on legislation was read; it discussed the constitutionality of the pharmacy laws, recently enacted, about which doubt had been expressed by a member; it was stated that a decision by the Supreme Court of the United State could only be obtained by bringing a test case before that tribunal, a proceeding beyond the purpose of the Committee. However, legal advice had been repeatedly asked, and was always in favor of these laws; moreover, among the objections to these bills while pending before the State Legislatures, the constitutionality of the measures had never been questioned as far as the Committee was aware, and there appeared to be no valid reason to doubt the correctness of these views. The failures to pass the required examinations in the different States, frequently amounted to 25 per cent. of the number examined. Attention was then directed to the pharmacy laws recently enacted in the State of New Hampshire and the Province of Quebec, to the establishment of a college of pharmacy in the latter place, and to the final settlement of the stamp tax on medicine by the passage by Congress of the so-called "Little Tariff bill" (see "Amer. Journ. Pharm.," 1875, pp. 137, 192 and 233).

The report of the Committee on Elixirs was read by the chairman, Wm. McIntyre. There appeared to be little necessity for any alteration of the formulas adopted in 1873; the nomenclature should express the remedial composition of the preparation; a simple elixir, answering general purposes, and meeting ordinary requirements, could serve to the physician as a guide for suiting the taste of his patient; the tendency of the "Pharmacopœia" to present simple preparations representing the drugs should be adhered to; greater attention was demanded in the choice of suitable vehicles, correctives and other auxiliaries. These were the most important points dwelled upon in the report, which closed with a number of formulas, given mainly as patterns of how elixirs may be extemporaneously prepared.

During the discussion which followed, some objection was made

against the adoption of the formulas, without giving any particulars. According to the Secretary, much inquiry had been made for the formulas of 1873 by parties who were not members of the Association, and they were probably more largely used than many were aware of. Mr. C. L. Eberle, we think, expressed himself to the point in saying that it made little difference what set of formulas was adopted; that the general sense of the Association was against elixirs, and that the formulas presented, having been thoroughly tested by the Committee, were good as far as elixirs could be good.

The report of the Committee on the Publication of Papers in advance of the "Proceedings," which was read by the chairman, Dr. A. W. Miller, thoroughly reviewed the arguments *pro* and *contra*, and concluded with the following resolutions, which were adopted:

Resolved, That the various pharmaceutical and medical journals are cordially invited to publish whatever notes they may desire to make of our proceedings and of the scientific papers which are read before our meetings.

Resolved, That when authors of scientific papers have prepared copies or abstracts of their essays previous to the meeting of the Association, they shall be at liberty to distribute such copies or abstracts at any time subsequent to the official reading of their respective papers, provided that the paper is always headed in publication by the statement that it has been read at our meeting.

Mr. Balluff read the report of the Committee on the Liebig Memorial, and referred to the public appeal, printed on page 425 of our last number.

A paper by Prof. Jos. P. Remington, on "the ready made pills of our day" was read. The experiments made with fair samples of the best pills that the market offered, demonstrated that a plain, uncoated pill was to be preferred in point of solubility; next in order came the sugar-coated, then the compressed, and lastly the gelatin-coated.

Mr. B. F. Stacey, of Charlestown, read an essay on paraffin, giving its history, method of manufacture, properties, use in pharmacy and the arts, and its importance as a commercial article. Prof. Babcock spoke of its use in some cases in place of wax, and when melted together with lard oil, as a substitute for lard.

Mr. Joseph L. Lemberger, of Lebanon, Pa., followed with an essay on paraffin oil, mainly with the view of producing a permanent base for ointments and cerates; the addition of pure beeswax masks its odor entirely, or very nearly.

Mr. T. R. Baker introduced the subject of prescriptions, and pre-

sented a communication from the Richmond Pharmaceutical Association (printed in part on page 280 of our June number).

A communication was also received from the Philadelphia College of Pharmacy, favoring the proposition of the former body in relation to the adoption of a suitable mark to designate unusual doses. On motion of Mr. Baker it was resolved that both papers be referred to a committee.

The Association then adjourned to the following morning at nine o'clock.

Fourth Session—Thursday morning, September 9th.

During the absence of the President the chair was occupied by Vice-President Baker. The minutes of the third session were read and approved.

At this session the Committee on Maximum Doses reported through Dr. W. H. Pile, that in view of the wide difference in the statements of different authorities in regard to the quantities of potent remedies which could safely be administered, they had come to the conclusion that an arbitrary list of maximum doses made from such conflicting authorities would be of no practical utility. They, therefore, suggested that a committee be appointed to confer with the National Medical Association on the subject of maximum doses, as well as the proper signs to be adopted to designate the correctness of larger doses when intended by the physician, and an understanding might thus be arrived at which would prove of practical value to the physician as well as the pharmacist.

The recommendation was adopted, and the communications presented at the third session referred to the same committee, to which the President afterwards appointed Dr. W. H. Pile, of Philadelphia, Louis Dohme, of Baltimore, and Chas. L. Eberle, of Philadelphia.

A specimen of ground rice was exhibited by Dr. A. W. Miller, which is used for adulterating granulated sugar intended for the use of confectioners in the West, who are led to believe it to be purer than ordinary sugar.

A paper on "Drug-mills," written by Andrew Blair, of Philadelphia, was read by the Secretary, and specimens of a large number of drugs, ground by the different mills in use by apothecaries, were exhibited. The author concluded from his experiments, that the Enterprise Mill was the most satisfactory for general uses; next in order was for heavy

work, the Hance Mill, and for small quantities, to be ground fine, the Troemner Mill; the old Swift Mill, also, answering an admirable purpose.

Dr. A. W. Miller read a paper on "Mezquite-gum," and exhibited specimens of the gum and of the leaves and fruit of *Algarobia glandulosa*. The gum, which is collected in the latter part of summer in Mexico and Texas, has been used in the Atlantic cities to some extent, in confectionery; but, owing to the cost of transportation, it can scarcely compete with the lower grades of gum arabic.

A resolution was offered and passed, authorizing the Executive Committee to prepare a metallic badge of membership.

Professor Diehl read the introductory chapter of his voluminous "Report on the Progress of Pharmacy" during the year ending June 30th, which was referred for publication.

An essay by G. W. Sloan, of Indianapolis, on "Phosphoretted resin," was read by Mr. Saunders. The author found that glycerin is an excellent vehicle for its administration, while gum arabic does not answer. Resin, containing 10 per cent. of phosphorus, may be incorporated with sugar of milk, and administered with perfect safety in the form of pills and mixtures.

A communication from Mr. W. H. Walling, which was now read, recommends, for phosphorus pills, to use 6 grains of phosphorus, 200 grains of cacao-butter and 100 grains of powdered soap, and proceed in the manner directed on pages 335 and 253 of this Journal; a sample of pills accompanied this paper.

Mr. Balluff, on behalf of the Committee appointed at the first session, reported favorably on the propositions to alter some articles of the by-laws, as recommended in the President's address. The consideration of the report was deferred. The same Committee likewise presented a report on the recommendations contained in the Secretary's report in regard to the next annual meeting, which were adopted.

Papers on diluted phosphoric acid, by L. Dohme, of Baltimore, J. P. Remington, of Philadelphia, and G. F. H. Markoe, of Boston, were read. The first two papers treat of the conversion of glacial into tribasic phosphoric acid, which was stated to be rendered difficult by the large quantity of soda often present in the glacial acid at present found in commerce; the preparation of the diluted acid from phosphorus was for this reason recommended. Prof. Markoe's paper recommends the preparation of phosphoric acid from phosphorus, by adding

a little bromine, or bromine and iodine, which combine with some phosphorus, forming pentabromide of phosphorus, which is decomposed by water into phosphoric and hydrobromic acids, the latter yielding, on the addition of nitric acid, free bromine, which again combines with phosphorus. At the end of the first part of the process some free bromine and iodine remain in the liquid, which are readily expelled in evaporating the nitric acid.

On motion, a Committee of three, consisting of Messrs. Gordon, of Cincinnati, Bullock, of Philadelphia, and Dalrymple, of Morristown, N. J., was appointed to report upon the time of next annual meeting.

Prof. Markoe read a paper on the preparation of hydrobromic acid from phosphorus and bromine, the hydrobromic acid formed in the presence of water being separated from the resulting phosphoric acid by distillation.

Mr. T. R. Baker, of Richmond, read an essay on the "Antiseptic properties of chloralhydrate," detailing many experiments. It was found a much better preservative for anatomical preparations than the solutions formerly used.

The Association adjourned until 3 o'clock P.M.

Fifth Session—Thursday afternoon, September 9th.

This session was mainly devoted to the reading of committee reports and papers. The Auditing Committee, the Committee on the Ebert Prize (*see* "Amer. Journ. Pharm.," 1875, p. 188), and the Committee on Specimens reported, the latter paying a well-deserved tribute to the Local Secretary S. A. D. Sheppard, for his valuable aid.

A paper by Mr. Mattison treated of moulds for suppositories, and mentioned more particularly those made by A. M. Knowlson, of Troy, N. Y., G. W. Sloan, of Indianapolis, and Benton, Myers & Canfield, of Cleveland.

A paper by C. Rutter, of New York, which asserted that the so-called tasteless iron salts (*see* "Amer. Jour. Pharm.," 1873, p. 214) were merely mixtures, but not definite chemical compounds, gave rise to some discussion, in which this view of their constitution was opposed.

Mr. McIntyre's paper on "Aromatic spirit of ammonia," attributes the cause of the precipitate occurring in this spirit, to the use of stronger instead of alcohol spec. grav. 0·835, provided that the other ingredients are as ordered by the "Pharmacopœia."

The paper on "Iodoform," by H. M. Wilder, of Philadelphia, recommends Bouchardat's process as easy of execution and giving a fair yield; but for obtaining the largest yield, Filhol's process is the best. For the cleaning of mortars and other utensils in which iodoform was used, an alcoholic solution of potassa or soda was recommended; or, if this did not fully accomplish the purpose, a concentrated solution of bichromate of potassium with sulphuric acid.

For Chlorodyne, Mr. J. F. Hancock recommended the formula of P. Squire (*see* "Amer. Journ. Pharm.," 1870, p. 263—"Proc. Amer. Phar. Assoc., 1874, p. 338), and that it be perscribed under the name of "Liquor chloroformi compositus," to distinguish it from the nostrum bearing the former name.

A paper on "Matico," by the Secretary, stated that this term is applied in South America to various plants, the leaves of which possess vulnerary properties (*see* "Amer. Journ. Pharm.," 1875, p. 118).

Mr. Wm. Saunders, of London, Ont., had formerly supposed that the insects attacking rhubarb root were the same kind usually found in drug stores, but on rearing some, he had found it to be a different species, which was new to him, and which he intended to investigate further.

Prof. E. Scheffer had determined by his experiments that pancreatin, when brought into the stomach, became destroyed, and consequeutly could have neither physiological nor therapeutical effect when taken internally.

In a paper on "The action of nitric upon carbolic acid," Prof. G. C. Wheeler stated that, on mixing the two acids, gases are rapidly and violently evolved, projecting the mixture in all directions, and that this behavior constitutes the so-called explosions which have been noticed from this cause.

Mr. Jos. Roberts read a paper on "Tests for chloralhydrate," suggesting to estimate the chloroform obtainable by decomposing the compound with sodiumhydrate, and to determine the formic acid by volumetric process.

The Secretary spoke of the traffic in patent medicines, to which the Association is opposed; they had to be kept, however, in most stores, when called for, and the efforts of pharmacists to diminish this trade would amount to nothing until the public had been better informed of their character; he then referred to the proposed publication of the "Popular Health Almanac," Dr. Fred. Hoffmann, editor, as one of

the means for imparting that information (*see* "Amer. Journ. Pharm.," 1875, p. 281).

A paper by Chas. Bullock gave valuable practical information on the preparation of medicinal bromides and hydrobromates.

In an essay on "Calabar bean and its medicinal preparations," Mr. G. W. Kennedy gave formulas for the tincture, solid and fluid extract, calabarized paper and calabarized gelatin.

Mr. R Rickey, of Trenton, N. J., in a paper on "Cinchona alkaloids," stated that a mixture of the same, in about the proportion in which they exist in the various barks, could be readily prepared; but he advocated that such mixtures be made from the pure alkaloids or their salts upon the presciption of physicians written with the view of meeting the indications of each case.

A paper by L. D. Drury, of Boston, gave some figures showing the deficiency of quinia in the citrate of iron and quinia of two or three manufacturers; the paper was subsequently referred to the author for further elaboration.

Mr. Chas. Rice had instituted a number of experiments upon the asserted insufficient solubility of commercial sulphate of morphia, but all gave a negative result.

An invitation was received from Prof. Sargent of the Percy Institution of Harvard University, inviting the members to visit the botanical garden at Cambridge. The invitation was accepted with thanks.

On motion, the Association adjourned until the following morning.

Sixth Session—Friday morning, September 10th.

The reading and approval of the minutes was followed by an invitation from Mr. Edward Burgess, Secretary of the Boston Society of Natural History, to visit the building and examine the collections of the Society, which was accepted with thanks.

Prof. Bedford read three papers "On the strength of commercial mineral acids," "On the purity of ether of commerce" and "On the impurities in bicarbonate of soda." The percentage of impurities in the latter case was found to be small, the order of purity being as follows: Natrona, Greenwich, Alhusen's, Schering's, French, Chance's, Jarrow's, Kidder's, Dwight's and Church's.

The following volunteer papers were read at this session: "On a now method of packing herbs," by Dr. A. W. Miller; "On cod-liver oil," by Mr. Marvin; "On the preparation of india rubber from milk-

weed," by Mr. Saunders; "On a new method of administering powders" (in wafer capsules), by Prof. Remington; "On the preparation of iodide of arsenic" (by dissolving arsenious in hydriodic acid and evaporating), by Prof. Babcock; "On *Grindelia robusta* and its preparations," by Mr. J. G. Steele; and "On the preservation of hydrocyanic acid" (by distilling it with alcohol), by Mr. J. U. Lloyd.

The Committee on the Time of the Next Annual Meeting reported in favor of convening it on the second Tuesday of September, 1876, at 3 o'clock P. M., which proposition was, after some discussion, adopted.

Votes of thanks were passed to *our brethren and friends in Boston* for their courteous attention, liberality and hospitality; to the press for their correct and full reports, and to Orlando Tompkins, Esq., for his invitation to visit the Boston theatre.

A communication from the Conference of Schools of Pharmacy was read, stating that they are in possession of documentary evidence that the Tennessee College of Pharmacy had offered, through its Treasurer and acting Secretary, to examine candidates, and graduate them without their attending the customary courses, just the same as if they had attended all the lectures." The evidence being demanded, the letter signed "B. Lillard, Treasurer and acting Secretary," was produced and read. After some discussion, a motion of Prof. Bedford was carried, that a Committee of three be appointed to communicate with the officers of the Tennessee College of Pharmacy and inquire whether the communication in possession of the Secretary, and of which a copy is to be furnished with this resolution, is authorized by the College or whether it is the individual action of the Treasurer and Acting Secretary.

Mr. J. Fehr alleged that some important remarks made by him at the Louisville meeting had been omitted from the published Proceedings, and complained, that a patented toilet article, exhibited by him last year, had not been mentioned in the report on the exhibition; on motion of Mr. Lillard, a Committee of three was directed to be appointed to inquire into and report on these complaints.

On motion of the Business Committe, a Committee of three was appointed to report on changes of the By-Laws, and print said action for the use of members at the next annual meeting.

Dr. A. W. Miller was elected Local Secretary for the ensuing year, and seventeen candidates were admitted members of the Association.

Mr. Eberbach's paper on the "Composition of Vinegar Bitters"

having been mailed, but failed to arrive, it was referred, and the Secretary requested to publish an abstract of it in the "American Journal of Pharmacy."

On motion of Prof. Sharples, it was voted to appoint a Committee of three to report on the desirability of introducing the metrical system of weights into pharmacy.

On motion of Mr. Leis, resolutions of thanks were passed to S. A. D. Sheppard, Jos. Burnett, H. F. Horton, E. H. Doolittle, and others of the Local Executive Committee, for their valuable services and attention; also to the past and present presiding officers; also, on motion of Mr. Sheppard, to the many exhibitors who have contributed to the success of the exhibition.

The report of the Committee on Queries was read, and the following papers were, for want of time, read by title and referred to the Executive Committee: "Alcohol and mucilage of acacia," by M. S. Bidwell; "Pharmaceutical Legislation in New Jersey," by Jas. R. Mercein; "How to improve the practice of pharmacy," by R. W. Gardner; "Progress of the metric system," by Fred. Brooks; "Mortar practice—a few notes on contusion," by H. T. Cummings; "On percolation," by Samuel Campbell; "On syrups prepared by percolation, and notes on home-made pills," by Clay W. Holmes; "Ung. Hydrargyri Nitratis," by Joseph H. Whall.

After the reading and approval of the minutes, the Association adjourned to meet in Philadelphia next year.

ON HYDROCOTARNINA.

Some years ago (1871), O. Hesse observed in the mother liquors of opium working for the extraction of alkaloids, a base having the composition $C_{12}H_{15}NO_3$, which he supposed to be a decomposition product of narcotina. $C_{22}H_{23}NO_7$(narcotina)$+H_2O$ may yield $C_{10}H_{10}O_5$(opianic acid)$+C_{12}H_{15}NO_3$, the latter differing from cotarnina $C_{12}H_{13}NO_3$—by $-H_2$. G. H. Beckett and C. R. A. Wright have dissolved pure cotarnina in diluted hydrochloric acid and treated the solution with granulated zinc, the acid being added in sufficient quantity to keep up a just perceptible effervescence, and the heat kept below 100° C., at which temperature the bases are easily decomposed. After two or three days the product was poured into a large excess of ammonia and the mixture agitated with ether, which, on evaporation, left large prisms having the composition $2C_{12}H_{15}NO_3.\ H_2O$. When pure they

fuse at 55° C. and lose their water of crystallization at 60°, forming an oily liquid which does not solidify for a long time after cooling. They give the color reaction described by Hesse, dissolving in sulphuric acid with a yellow tint, the solution becoming carmine red on heating; shortly violet or purple streaks become visible, and finally, by continuing the heat, the whole become a dirty reddish-purple.

Hydrocotarnina boiled with dilute sulphuric acid in the presence of manganese dioxide, is almost wholly converted into cotarnina and tarry decomposition products. Ferric chloride acts in the same way, yielding, however, a less pure product; a similar result is obtained with sulphuric acid and potassium dichromate.

When narcotina is heated in sealed tubes with water to 140 or 150°C. meconin $C_{10}H_{10}O_4$ and hydrocotarnina are formed. On boiling narcotina with baryta water, an inverted condenser being attached, methylamina was given off and meconin being found in the flask; the hydrocotarnina having been decomposed by the baryta.

Dr. F. Pierce exerimented upon animals with cotarnina and hydrocotarnina, and found the former to be without the slightest noticeable effects, even when given hypodermically to kittens, rabbits and guinea-pigs, in doses up to 0·5 grams. Hydrocotarnina, however, produces marked results. Doses of 2½ to 5 centigrams produced in those animals rapid and well-marked tremors, passing into severe epileptiform convulsions, accompanied, apparently, with more or less affection of the sensory organs, great muscular prostration and salivation ensuing. 0·25 grams killed a guinea-pig and 0·4 grams a kitten in ten minutes, but the latter dose did not prove fatal with a full-grown rabbit.—*Journ. Chem. Soc.*, 1875, pp. 573–585.

CHEMICAL EQUIVALENCE OF THE ALKALIES IN THE ASHES OF PLANTS.

MM. P. CHAMPION AND H. PELLET.

In an earlier paper the authors have shown that the amounts of sulphuric acid necessary to saturate separately all the alkalies contained in the ash of beets (roots and leaves) may vary within remote limits, but that their sum is sensibly constant; or, in other words, that the partial substitution of alkalies takes place according to chemical equivalents. Further researches have led them to conclude that this law applies not merely to the beet, but to a great part of the vegetable kingdom, if not to the whole. They find in particular that, in the ash of tobacco, lime and potash replace each other according to their chemical equivalents. —*Chem. News*, July 30, from *Compt. Rend.*

JERVIA.—ITS HISTORY, OCCURRENCE IN *VERATRUM VIRIDE*, METHOD OF PREPARATION AND PROPERTIES.

BY CHARLES BULLOCK, PHILADELPHIA.

The alkaloid jervia or jervine was discovered by E. Simon, in 1837, in the root of *Veratrum album*. It was obtained by mixing the alcoholic extract of the root with dilute hydrochloric acid, and precipitating by carbonate of soda. The precipitate was dissolved in alcohol, decolorized with charcoal, and the alcohol removed by distillation. The greater part of the residue then solidified in a crystalline mass, from which the veratrine, being uncrystallizable, may be almost entirely removed by submitting it to pressure, moistening with alcohol and again pressing; in this manner jervia is obtained almost pure. Jervia is colorless and crystalline, gives off 69 per cent. of water at 100° C., melts at a higher temperature to a colorless oil which decomposes when heated above 200° C. It is insoluble in water, soluble in alcohol, and very sparingly soluble in ammonia. The acetate of jervia is soluble in water; the sulphate, nitrate and hydrochlorate are very sparingly soluble in water and in mineral acids. When fused, jervia gives off ammonia.* Will's analysis of jervia gives:

C.,	74·73.
H.,	9·62.
N.,	5·38.
O.,	10·27.
	100·00

from which he deduced the formula $C_{60}H_5N_2O_5$.

In the September number of the "American Journal of Pharmacy," for 1865, I published an examination of the root of the *Veratrum viride*, showing that two alkaloids were contained in the root, one of which was soluble and the other insoluble in ether, and that neither of these alkaloids answered to the characteristic tests for veratria obtained from the seed of *Veratrum sabadilla*.

To these alkaloids I gave no name; on revision of the U. S. Dispensatory for the 13th edition, 1870, Prof. George B. Wood, M.D., gave to them the names of "Viridia," for the product insoluble in ether, and "Veratroidia," for the product soluble in that menstruum.

Prof. Dragendorff, in his work "Die gerichtlich-chemische Ermitte-

* "Poggendorff's Annalen," vol. xli, p. 569.

lung von Giften," published in St. Petersburg, in 1868, mentions veratria as one of the constituents of *Veratrum album*. In 1869 Prof. Maisch wrote to Prof. Dragendorff informing him of the investigation made of *Veratrum viride*, and suggested that the alkaloids of the two *Veratrums* were probably identical, and that *Veratrum album* contained no veratria. In reply, Prof. Dragendorff informed Prof. Maisch "that *Veratrum album* contained an alkaloid which is not identical with veratria (jervia of course, excepted), appears to me very probable. *Veratrum nigrum* likewise contains an alkaloid which deserves investigation."

Prof. Dragendorff was not then acquainted with the details of the examination of *Veratrum viride*. Copies of the paper were sent to him by Prof. Maisch, accompanied with some of our *Veratrum viride*.

Under date of January, 1870, Prof. Dragendorff writes: "The investigation which my friend, Dr. Brunner, has made here with *Veratrum viride* harmonize with the results of Mr. Bullock."

Prof. Theo. G. Wormley, M.D., in his work on "Michro-chemistry of Poisons," published in 1869, also overlooks the examination made of *Veratrum viride* in 1865.

Mr. Charles L. Mitchell, in the "American Journal of Pharmacy," for March, 1874, announced that he had isolated jervia from the root of *Veratrum viride*. Mr. Mitchell was probably anticipated in his result by Prof. Dragendorff.

In September, 1874, Mr. Mitchell presented to the American Pharmaceutical Association, a paper prepared with much patient labor and commendable zeal, which was an exhaustive examination of the officinal *Veratrums*. Mr. Mitchell demonstrated that the alkaloid heretofore called "viridia," was in reality jervia. Through the kindness of Mr. Mitchell I received a specimen of jervia, and on examining it found that it did not entirely dissolve in acetic acid. 0·38 grains, incinerated to whiteness in a platinum capsule, left a residue weighing 0·05 grains, equal to about 13 per cent.; this inorganic matter dissolved in dilute hydrochloric acid, and, on addition of ammonia and oxalate of ammonia, gave the characteristic reaction for lime. The acetic solution of the alkaloid responded to Simon's description of jervia.

The presence of jervia in *Veratrum viride* being established, the attempt was made to obtain it by a process based on Simon's experience. To this end the fluid extract of the root* (U. S. P.) was poured into three times its volume of water previously acidulated with two fluid-

* The root was collected in Ashe Co., N. C.

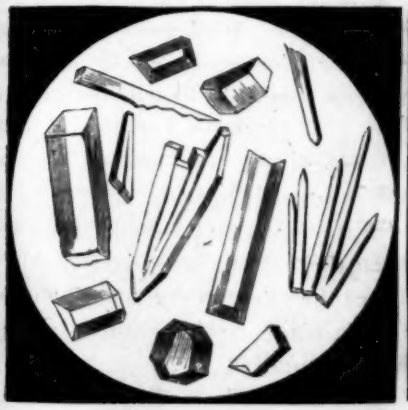
drachms of hydrochloric acid to the pint. After precipitation of the resin, the filtered solution was evaporated to remove the alcohol, a resin-like deposit took place in the solution freed from alcohol. This was collected, dried, powdered, digested with carbonate of soda, thrown upon a filter and washed with water as long as the washings had any color. In this way nearly all resinous and coloring matter was removed. The product was then digested with warm dilute acetic acid. On addition of ammonia water to the acetic solution, a precipitate was obtained which, when dry, was almost colorless.

The alkaloid was powdered and digested with ether [free from alcohol] to remove any adhering veratroidia. It was then dissolved in alcohol, digested with a small amount of animal charcoal, filtered and set aside to crystallize.

The etherial washings were evaporated, and the residue dissolved in dilute acetic acid; the solution was found to contain both veratroidia and jervia. The two alkaloids were separated by a process hereafter to be described.

The normal hydrochloric solution from which the crude jervia had been deposited was precipitated by ammonia, and the mixed alkaloids treated with ether. An examination of the products showed the presence of both jervia and veratroidia, the major part being veratroidia.

FIG. 1.



JERVIA.

FIG. 2.

NITRATE OF JERVIA.

Jervia was obtained from its solution in alcohol in small prismatic crystals, which, when viewed in water under a magnifying power of 500 diameters, present the forms shown in fig. 1. It is very sparingly

soluble in dilute alcohol and in ether. The acetate and phosphate are soluble in water; the sulphate, muriate and nitrate are sparingly soluble.

Caustic alkalies precipitate jervia from its solution in acetic acid; the precipitate is insoluble in an excess of the precipitant. Under the microscope the precipitated alkaloid at first appears amorphous, after standing twenty-four hours it shows a disposition towards structural arrangement, but no distinct crystalline formation is observable.

Alkaline carbonates do not precipitate jervia from a weak acid solution of the acetate in the cold, when added to slight alkaline reaction. The addition of more alkaline carbonate, or heating the solution, determines the precipitation; the precipitate is sparingly or not at all soluble in excess of the precipitant. When a cold acid solution of acetate of jervia is carefully neutralized with carbonate of potassium so as to produce no immediate precipitation, then allowed to stand in a warm place, precipitation occurs as the carbonic acid escapes; and at the end of twelve hours the precipitated alkaloid shows, under the microscope, round, dumb-bell-shaped and stellate arrangements, throwing out prismatic crystals; some distinct forms of jervia crystals are also seen.

Alkaline bicarbonates react with jervia in the same manner as the neutral carbonates. The presence of a large amount of free carbonic acid from the bicarbonates, tends to hold the alkaloid more completely in solution after alkaline reaction is reached. At the end of twelve hours precipitation is effected. Under the microscope a more advanced crystalline arrangement is seen than occurs when the neutral carbonates are used as the precipitant.

Sulphuric, nitric and hydrochloric acids, as also the neutral salts of these acids, precipitate jervia from its solution in acetic acid.

With *sulphuric acid* and the *sulphates*, the reaction takes place slowly.

With *hydrochloric acid* and the *chlorides*, the precipitation is more prompt, and is accelerated by vigorous stirring of the liquid in the test tube with a glass rod. When the solution is weak, white streaks will appear after some time where the rod has touched the tube.

With *nitric acid* and *nitrates* the precipitation is immediate. The precipitate formed with nitrate of potassium is so insoluble in an excess of the potassium salt, that the mother water is scarcely troubled by after addition of ammonia water.

The insolubility of nitrate of jervia in a solution of nitrate of

potassium, affords a ready method of separating this alkaloid from the veratroidia associated with it. After precipitation and separation of the jervia, the veratroidia can be thrown down by caustic soda.

Nitrate of jervia is precipitated from dilute acetic solutions in a crystalline form; it is soluble in 266 parts of water, and 247 parts of alcohol, at 70° F.; it is more soluble in dilute alcohol. From its solution in dilute alcohol it readily crystallizes in small prismatic crystals. When viewed in water, under a magnifying power of 500 diameters, the crystals present the appearance shown in fig. 2.

Muriate of jervia appears amorphous immediately after precipitation; after standing it assumes a crystalline formation. The precipitate occasioned by hydrochloric acid is more disposed towards distinct crystallization than that produced by the neutral chlorides.

Muriate of jervia requires 121 parts of water and 205 parts of alcohol for solution.

Sulphate of jervia.—The precipitate produced by sulphuric acid is a granular amorphous powder; neutral sulphates also precipitate jervia in a granular condition, but after standing the precipitate has a disposition to crystallize in wheel forms.

Sulphate of jervia requires 427 parts of water and 182 parts of alcohol at 70° F. for solution.

From solution in hot alcohol it crystallizes in prismatic crystals.

Tests for jervia.—The color reactions of jervia with reagents give results which are rather negative in character.* The insolubility of the nitrate in a solution of nitrate of potassium appears to be the most distinguishing feature of this alkaloid. A solution of the acetate containing one part of the alkaloid in 400 parts of water, gives a precipitate in a few minutes after addition of potassium nitrate in excess. One part in 600 parts of water becomes turbid in three hours after adding the reagent. One part in 1,200 parts of water remains clear; after standing four hours, minute crystal floating in the solution can be seen with a pocket lens. Under a high magnifying power they present well marked forms of nitrate of jervia crystals.

The physiological properties of jervia have been investigated by H. C. Wood, Jr., M.D., and described by him as "producing general weakness, absence of vomiting or purging, lowering of arterial pressure, and

* Sulphuric acid affords the only color reaction of importance; the color is at first yellow, changing in a few minutes to green; at the end of an hour it becomes a turbid yellow.

slowing of the pulse, profuse salivation, and, finally, convulsions. The character of the convulsions is very peculiar and very constant."*

CONTRIBUTIONS FROM THE SCHOOL OF PHARMACY OF THE UNIVERSITY OF MICHIGAN.

REPORTED BY PROF. ALBERT B. PRESCOTT.

I. Purification of Commercial Gutta-Percha, and Preparation of Liquor Gutta-Percha. By Geo. E. Willmarth, P. C.

The preparation of the solution from commercial gutta percha, by clarification with carbonate of lead, as the U. S. Pharmacopœia directs, often gives unsatisfactory results. The carbonate requires a long time to settle and sometimes fails at last to separate completely, so that the solution, if colorless, is not clear and may be contaminated with lead.

The *methods of purification* tried in this investigation depend upon the principle that gutta percha is precipitated white and pure, by alcohol, from solvents which mix with alcohol. These solvents may then be recovered from their alcoholic mixtures by addition of water. The solvents tried were benzole and bisulphide of carbon, the benzole (from coal-tar) having about 0·85 sp. grav. and boiling at 176° to 178° F.

It is stated, on the authority of Kent† that, if any of the hydrocarbons are used to dissolve gutta percha, the solvent cannot be fully expelled without decomposition of the gutta percha. On the contrary, the precipitate formed by alcohol in benzole solution of gutta percha, when dried on the water-bath, was found to lose all odor of benzole in a short time, and to possess as much tenacity as samples purified by chloroform or bisulphide of carbon. At ordinary temperature the precipitate dried very slowly.‡

120 grains of gutta percha of commerce were dissolved by aid of heat in 3 troyounces of *benzole* (1 to 12); the solution was poured upon a filter under a bell jar and left 24 hours, the thermometer being 60° F. at the end of that time, when the gutta percha was found to be deposited in a white granular mass, with a thin granular coating of pure

* "Proceedings of Am. Phar. Asso.," 1874, p. 418.

† "Am. Jour. Sci." (2), vi, 246.

‡ According to the "U. S. Dispensatory," p. 444, complete drying requires several weeks.

gutta percha on the filter. At 92° F. the deposit dissolved. (This deposition, at about 60° and more rapidly at lower temperatures, occurs with ether and essential oils, but not with bisulphide of carbon or chloroform.) The solution required 17 c.c. (4 fluidrachms and 35 minims) of alcohol for complete precipitation. The precipitate was drained, washed with a little alcohol (which facilitates its collection), and collected into a compact mass, which was stirred for a short time in an evaporating dish over the water-bath, when it was nearly or quite free from benzole. When 42 grains of this purified gutta percha were dissolved in 1 troyounce of chloroform (the pharmacopœial proportion), a clear solution of a light brown color was obtained. It was of thicker consistence than the pharmacopœial solution, and this will always be observed when pure gutta percha is taken and the lead clarification omitted. In subsequent operations with benzole, it was found that by addition of animal charcoal to the solution before filtration, a colorless preparation was obtained. The benzole used in these operations was mostly recovered from its mixture with alcohol, by adding sufficient water, setting aside in a cylindrical vessel and drawing off the upper liquid. It was then somewhat turbid, but after distilling from a water-bath, it was as pure as before use.

In purification with *bisulphide of carbon*, 120 grains of gutta percha required 4 troyounces of this solvent (1 to 16). The solution, filtered under a bell-glass, remained clear, and was somewhat less colored than the benzole solution. It required between four and five times its volume of alcohol for complete precipitation. The precipitate was gathered on a pill-tile and pressed with the spatula into as thin a sheet as possible. After the evaporation of all the liquids, the gutta percha was a milk-white compact sheet, and weighed 80 grains. Of this 42 grains were dissolved in a troyounce of chloroform, giving a clear solution, very slightly colored. By subsequent operations it was found that by adding animal charcoal to the bisulphide of carbon solution, the filtrate is obtained colorless. The bisulphide of carbon and a portion of the alcohol were recovered as follows: The mixture of bisulphide of carbon and alcohol was subjected to fractional distillation, and the distillate, containing a very little alcohol, was washed with water, drawn off and then filtered. The alcohol left by the distillation was filtered and used in another operation.

From these and other concordant experiments, it was fully decided that bisulphide of carbon is generallv preferable to benzole as a *purifying*

agent. The difficulty in obtaining benzole of required standard, and the trouble of rectifying it, as well as the superior purity of the gutta percha precipitated from bisulphide of carbon, are the considerations in favor of the latter.

After many trials with varied proportions and conditions, the following *directions for preparation of the solution of gutta percha* from commercial gutta percha are presented:

(1.) *For purification of the gutta percha:* In a strong bottle provided with a finely-ground stopper, and containing four troyounces bisulphide of carbon, place 120 grains commercial gutta percha (or one part gutta percha to sixteen of the solvent), and shake frequently until dissolved. After solution has taken place, add a small quantity of animal charcoal, shake thoroughly and filter under a bell-jar placed upon a ground glass plate (the rim of the jar being coated with tallow), to secure an air-tight vessel. Into a wide mouth bottle, provided with a good stopper and containing four volumes of alcohol for one of the filtrate, pour the filtrate a little at a time, shaking after each addition; then shake thoroughly until the precipitate collects into one mass and the liquid is quite clear. If the liquid does not become nearly clear after shaking, add more alcohol and shake again. Pour off the liquid into another bottle; transfer the precipitate to a pill-tile and press it with a spatula into a sheet as thin as possible, and leave the sheet for 24 hours or until all smell of bisulphide of carbon and alcohol has disappeared and a little piece from the thickest part of the sheet dissolves clear in chloroform. (To save time, the precipitate, instead of being pressed into a sheet may be stirred in an evaporating dish on the water-bath till found pure as above.)

(2.) *For recovery of solvent and precipitant:* Place the liquid from the precipitate in a retort previously set over the water-bath and connected with an ice-cooled receiver, and by gentle heat distil over all the bisulphide of carbon. When the retort is cool, remove the receiver and add to the bisulphide of carbon a large quantity of water and shake gently; pour off as much water as possible and then, pouring into a burette, draw off the bisulphide of carbon, from the remaining water, through a filter into the bottle to contain it. The alcohol in the retort should be filtered, and both solvent and precipitant are ready for use again.

(3.) *For preparation of the solution:* Take of the fully purified gutta percha, in thin slices, forty-two (42) grains; chloroform one fluidounce;

add the gutta percha to the chloroform, in a bottle provided with a finely-ground stopper and designed to contain the preparation, and shake until dissolved.

Precautions. If all the vessels are not clean and perfectly free from dust, the preparation will be cloudy; and if the alcohol be not wholly removed from the precipitate, the preparation will be milky. In the latter case, heating causes the milkiness to disappear, but it returns on cooling again. If milky from presence of alcohol, the liquor can be obtained clear by evaporating off the solvent and drying in a thin sheet; then dissolving in chloroform again.

Ordinary commercial bisulphide of carbon and the purified chloroform of the trade, are *sufficiently pure.* If benzole be chosen for purification, it should be 0·85 sp. gr., and boiling at 176° or 178° F.

The only necessary *apparatus* not found in all drug stores consists of the bell-jar with ground rim and plate, the burette, the retort and receiver, and (?) the water-bath.

Thin sheets of gutta percha may be prepared by pouring sufficient of the solution into a breaker, rolling the beaker to form a uniform coating by evaporation of the solvent, then immersing the vessel in cold water, when the film may readily be detached from the glass.

II. Chemical and Microscopical Examination of Cotton Root Bark. By William C. Staehle, P. C.

The sample examined corresponded petfectly with the botanical description recently given by Professor Maisch,* with the additional particular that numerous dark spots are visible to the unaided eye along the inner layer. The bark was more or less quilled. Its powder had an ochre color. It was determined to be from G. Herbaceum.

It also agreed with the following *microscopical description* of the root bark of southern cultivated cotton by Professor Harrington, of this University.†

"The bark consists of the three usual layers. The outer or cortical layer consists of several rows of thin walled, tabular, tangential cells, with some granules of brown matter within. The middle layer is nearly or quite interrupted by the wedges of the liber. With the medullary rays, it consists of a series of wedges, with their bases on

* "Am. Jour. Phar.," 1875, p. 11, (Jan.)

† From MS. of "Identification of Vegetable Drugs, Foods and Fibres."

the cortical layer, and edges turned toward the center of the plant. The tissue is a parenchyma composed of thin-walled cells, somewhat elongated in the direction of the axis of the root. In the transverse section the outer cells are flattened and tangential. These cells gradually pass into those of the medullary rays, which are flattened at the sides and extended radially. The cells of the middle layers contain considerable starch. Masses of orange or yellow resin also occur in some abundance. The wedges of the liber or inner bark are visible to the naked eye as slender, somewhat curved, hyaline rays, broad at the base, extending through the dead-white middle layer. An amplification of 50 diameters shows these wedges to be made up of alternating, transverse rows of long, slender, very thick-walled liber-fibers and parenchymatous cells. The wedges are sometimes split for a short distance at the base by short medullary rays. The larger medullary rays, as already mentioned, pass insensibly into the middle layer. They are very broad. The starch is abundant in the parenchyma of the middle layer and liber. It consists of roundish grains, about the size of the grains of corn-starch, but with curved surfaces. They are usually simple, though as many as six or eight are aggregated. The nucleus is usually visible with a magnifying power of 50 diameters, but the rings are not. The grains turn blue promptly on the addition of iodine. The resins are in large rounded masses, occupying the space of eight or ten absorbed cells in the parenchyma of the middle and inner layer. The color varies from yellow to a deep red, usually yellow-orange. The masses are easily seen by the naked eye, as dark round dots in about the middle of the bark. The masses often slowly dissolve in water, setting free innumerable minute granules which exhibit active movements, the characteristic microscopic behavior of a gum-resin. The wood is noteworthy for two reasons: (1) the pith is always more or less excentric; (2) the resin is rarely found in it."

The *chemical examination* was conducted as follows: Of the dried and powdered bark, 100 grams were moistened, macerated in conical percolator for three days, and slowly percolated with alcohol of specific gravity 0·835, till the menstruum came through colorless, and left no residue on evaporation. The percolate was of a dark brownish-red color: it was put in a retort and the alcohol recovered. The residue consisted of a syrupy aqueous solution of pale red color, and a dark red precipitate of resin. The entire residue was treated with water, and thrown upon a moist filter. The aqueous *filtrate from the resin* had a sweetish taste, and when warmed with potassio-cupric tartrate,

gave an abundant precipitate of cuprous oxide (probably due to sugar). Another portion, treated with ferric chloride, gave a purplish-black precipitate. The general tests for alkaloids gave no positive results, but the quantity of material was not large enough to give decisive results. The *precipitate of resin* left on the filter was well washed with water, dried, pulverized, and again washed and dried.

This *resin* had the appearance of powdered cochineal. The residue left by evaporation of solutions of the resin looks black. Fragments under the microscope show the reddish-brown color, the resinous lustre and conchoidal fracture. From the 100.00 grams of powdered bark, 7·93 grams of the resin were obtained: equal to 609 grains from 16 troyounces. The *solubilities* of the resin were determined at first qualitatively, and then quantitatively, in the following way: Saturated solutions of the solvents in question were made and left in corked test-tubes over night, then two cubic centimeters of the clear supernatant solution were taken off with a pipette (filtration being objectionable by reason of the evaporation of the menstruum) and evaporated on a tared watch-glass and weighed. The volume of the solution was multiplied by specific gravity of the solvent for weight of the solution: not regarding the slight increase in specific gravity caused by solution of the solid. In this manner it was ascertained that *one part of the resin is soluble in*

14 parts of alcohol,
15 " chloroform,
23 " ether,
122 " benzole.

It is soluble in aqueous hydrate of ammonium, potassium, and sodium; being precipitated from these solutions by acids.

Treated with solution of *potassium hydrate*, the resin turns green. This test is best obtained by evaporating a few drops of the solution of the resin on a porcelain surface, to obtain a thin film, and adding potassa solution of ordinary reagent strength, when a bright red color is obtained. On addition of water the color pales to a sage green. *Sulphuric acid* dissolves the resin, forming a reddish-brown solution.

A percolate of the powdered *bark with ether* of U. S. P. standard had a dark reddish-brown color, and left a brownish-black residue. This residue was treated with water and tested for tannic acids with negative results. Exhausted with hot alcohol, a small residue was left,

and found insoluble in aqueous potassa, but soluble in bisulphide of carbon: thus corresponding in solubilities to *caoutchouc*. Vegetable wax could not be identified, being present in very minute quantities or not at all.

A *decoction* of 100 grams of the bark was precipitated with lead acetate solution; then with lead subacetate solution; the filtrate was freed from the excess of lead by hydrosulphuric acid gas, concentrated, and set aside two days, when no crystals were found under the microscope. The concentrated solution was tried with the general reagents for alkaloids, with negative results: it gave reactions for glucose.

In a few particulars the results of this examination differ from those of Prof. Wayne, made about three years since.*

It would seem that difference in the material must be the explanation for some of these different results, which may be placed parallel as follows:

1. Prof. Wayne finds the percolate pale amber in color. In this examination it was dark reddish-brown. He ascribes the final color of the resin to the heat applied in distillation. In this examination, to ascertain if such was the fact, a percolate was made, and evaporated at ordinary temperature, when the resin was of the same color. Again, one percolate was made and evaporated in the light and a duplicate one in the dark, evaporation being without application of heat, and the resin was of the same color in both portions.

2. Prof. Wayne finds the resin (after action of heat in the retort) insoluble in alcohol, chloroform, ether, and aqueous ammonia; in each of which solvents it was in this examination found to be soluble, as before stated.

III. Assay of five samples of Opium, Comparison of three Morphiometric Processes, and Examination of two samples of "American Opium." By J. Clark Moss, P. C.

The five samples of *opium* were purchased at as many dispensing stores. The proportion of *morphia* was determined by Staples' process with Procter's modification,† the dry powdered opium being first exhausted with warm benzole, and the solution treated with ammonia in presence of alcohol, exactly as in the U. S. P. preparation, the crystals being washed with ether (without use of animal charcoal). The

* "Am. Jour. Phar.," 1872, 289, July.

† "Proc. Am. Phar. Assoc.," 1870; "Am. Jour. Phar.," 1871, 65.

opium was weighed in the condition purchased, and the per cent. of morphia calculated on that weight. The per cent. of *water* was ascertained by drying the powder, in a steam oven, to a constant weight. The samples were more or less air-dried when obtained.

	Water.	Morphia.
No. 1,	9·84 p. c.	8·94 p. c.
" 2,	5·80 "	7·56 "
" 3,	7·26 "	10·92 "
" 4,	9·77 "	12·53 "
" 5,	—— "	9·25 "
Average,	8·17 "	9·84 "

No. 5 was assayed again by *Hager and Jacobsen's process.**

This process may be described as follows: Triturate 6½ grams of opium with 3 grams of dry calcium hydrate and enough water to form a soft mass, and rinse into a weighed flask, adding water enough to make the mixture weigh 74½ grams. Cork, digest on the water-bath for one hour, cool and replace water to restore the weight to 74½ grms. Filter 50 cub. cent. into a large test-tube previously marked to that measure; add to this filtrate 8 drops of benzole and 3 cub. cent. of ether; cork and shake, and then add 4½ grams of powdered ammonium chloride, and agitate till dissolved. After three or four hours, filter out all the crystals upon a weighed filter; dry and wash with a little chloroform (Hager prefers non-alcoholic ether); then dry and weigh as alkaloid from 5 grams opium. In this examination of No. 5,

Staples' process gave 9·25 p. c. morphia;
Hager-Jacobsen's process gave 9·89 p. c. morphia.

The *process recommended by Flückiger and Hanbury*† was tried. This process differs from Staples' chiefly in the particulars that the opium powder, with pumace, is exhausted with boiling ether; the solution to be treated with ammonia is but very slightly alcoholic (and is slightly acid), and the crude crystals are purified by recrystallization from alcohol of sp. gr. 0·822 at least once. No. 1, by

Staples' procsss gave 8·94 p. c. morphia;
Flückiger and Hanbury's 10·34 p. c. crude morphia.

* Hager's "Untersuchungen," ii, 176. Hoffmann's "Examination of Medicinal Chemicals," 268. A modification of this process is given from Schlosser in "Am. Jour. Phar." 1871, 224

† "Pharmacographia," 59.

The morphia was not as pure in the latter as in the former process, and the repeated recrystallizations caused continued diminutions in its quantity.

By the U. S. P. process, smaller percentages were obtained, as the loss by animal charcoal could not be wholly prevented. Schacht's process (1862) requires the decolorization of the opium infusion with animal charcoal, after which the filtrate is set aside with excess of ammonia, and the crystals well washed with ether for extraction and determination of narcotina. Dragendorff, in his recent valuable work,* states the loss by this use of animal charcoal to be about 1 per cent. He recommends its omission, substituting purification by washing the crude morphia with dilute alcohol, or else dissolving in acidulated water and precipitating by ammonia. (This precipitate will be crystalline and requires time). Of the processes above named, the investigator at present prefers Hager-Jacobsen's, both because of its good results and because it is completed in a shorter time than the others.

The first sample of "*American Opium*" was obtained at a dispensing pharmacy in Toledo, Ohio, with the assurance that it came from Southern Ohio, was two years old, was believed to be veritable opium, but was never dispensed in prescriptions. It is darker in color than genuine opium, with nearly the same consistence, and permeated with small crystals, just distinctly visible to the naked eye. It has an odor resembling both tobacco and licorice, but not resembling opium. It has no taste of opium. It was found to be destitute both of morphia and of narcotina. Water dissolved 89·4 per cent. of it, the solution containing much gum and rapidly fermenting. The crystals were found to be potassium nitrate. A trace of alkaloid was indicated by a slight precipitate with potassio-mercuric iodide, but the examination was not extended to any further definite result.

The second sample was obtained at a pharmacy in Detroit, Mich., after fruitless inquiry for American opium at a large number of stores in that city. It was marked "Wilson's American Opium," and was stated to have cost $4 per lb., and that it was not used except for laudanum for external application! It closely resembled the other sample, having neither the appearance, taste or odor of opium, and not containing morphia or narcotina, at least in quantities distinguishable by ordinary means.

* "Werthbestimmung einiger starkwirkender Droguen," 82.

IV. Examination of eight samples of Spirit of Nitrous Ether.

By Oakley Griggs, P. C.

The first seven samples were purchased of as many dispensing pharmacists; the eighth was prepared according to the U. S. P., and examined immediately.

The proportion of ethyl nitrite was determined volumetrically by a standard solution of potassium permanganate, according to Feldhaus' method.* The test for aldehyd was made by adding reagent solution of potassa, and setting aside for twelve hours.

Sample.	Sp. Gr.	Ethyl Nitrite.	Test for Aldehyd.
1	0·894	3·7 p. c.	No deposit, but a red solution.
2	0·887	4·2 "	Considerable deposit, deep red solution.
3	0·859	4·0 "	Slight deposit, reddish solution.
4	0·903	3·5 "	Much deposit, amber-colored solution.
5	———	4·4 "	No deposit, light straw-colored solution.
6	0·900	3·8 "	Slight deposit, light straw-colored solution.
7	0·933	4·1 "	Much deposit, dark red solution.
8	0·834	5·4 "	No deposit, yellow to reddish solution.

CHEMICAL ANALYSIS OF POTASH.†

BY DR. G. C. WITTSTEIN.

Potash is mostly tested for its commercial value, that is the amount of carbonate of potassium it contains, by saturating with an acid of known strength; consequently the assay is a very simple process, which, nevertheless, requires several precautions to make the result correct, and would be very unreliable if the potash should contain carbonate of sodium.

Often it is desirable to learn the complete composition of potash; thereby the difficulties are increased, which not everybody will immediately succeed to overcome, but many will gladly accept any information gathered in relation thereto. The most frequent impurities are (including sophistications) soda, lime, magnesia, alumina, ferric oxide, manganese oxide, silica, sulphuric acid, phosphoric acid, chlorine.

*"Archiv der Pharm.," 1860, April. "Outlines Proximate Organic Analysis," 180.

† Reprint from the "Zeitschrift des Allgem. Oesterr. Apotheker-Vereines," 1875, No. 8. Communicated by the author, and translated by P. H. Dilg.

These, however, never are found all associated; silica and chlorine are probably never absent from the portion soluble in water, or ferric, oxide and silica from the insoluble portion. Manganese generally manifests its presence by the bluish-green tinge it gives to the potash but it is always present in such small quantities that it cannot be determined without considerable loss of material; the same holds true of the phosphoric acid.

The following treatment extends to all the above-mentioned bodies: Take 200 grams common potash, triturate to coarse powder, weigh off 1 gram and 20 grams; in the first, find the loss of water through the loss of weight by incandescence; cover the second in an evaporating dish with 100 grams of distilled water, allow to boil slowly for 10 minutes, filter, wash contents of filter until the filtrate does not give an alkaline reaction, set contents of filter aside for future experimenting (see *b*), and dilute the filtrate with sufficient water to make 200 c.c.m.

A. The part soluble in water.

(*a.*) Estimation of chlorine: 20 to 40 c.c.m. are supersaturated with nitric acid, filtered, if necessary (the turbidness arises from the silica being set free), precipitate with nitrate of silver, collect on a previously tared filter, dry at a temperature of 100° C., weigh and calculate therefrom the chlorine. (100 parts silver chloride contain 24·74 parts chlorine.)

(*b.*) Estimation of sulphuric acid: 20 to 40 c.c.m. are supersaturated with HCl, filtered, if necessary, and precipitated with chloride of barium; calculate from the precipitate (previously exposed to incandescence) the amount of SO_3. 100 parts barium sulphate contain 34·35 parts SO_3.

(*c.*) Estimation of phosphoric acid: 50 c.c.m. are supersaturated with HCl, and filtered, if required. Then add about 1 gram chloride of ammonium and a few crystals of sulphate of magnesium, supersaturate with ammonia, stir for a few minutes, and set aside a day. If, after the expiration of that time, crystals of ammonio-magnesium phosphate have formed, collect; lixivate with ammoniacal water, dry, heat to redness, and calculate the phosphoric acid from the remaining pyrophosphate of magnesium. (100 parts of this combination are equivalent to 64 parts phosphoric acid.)

(*d.*) Estimation of the dissolved silica: 50 c.c.m. are supersaturated with HCl; evaporate to dryness, then mix with water, decant the supernatant liquid, and collect the silica on a filter; heat to redness, weigh, and bring the filtrate back to 50 c.c.m.

(*e.*) Estimation of the potassa and soda: From the lastly-named 50 c.c.m. evaporate 10 c.c.m. to dryness, weigh the saline residue, and subtract the sulphate of potassium contained therein; as it is already known (by experiment *b*) how much SO_3 is contained in 10 c.c.m. of the solution, it is only necessary to obtain the weight of the sulphate of potassium by calculating from that SO_3. The alkaline chlorides are contained in the remaining salt. Dissolve the salt again in water, precipitate with nitrate of silver, and calculate the chlorine form the chloride of silver (previously dried at 100°C.); by subtracting the chlorine from the two chlorides the weight of both metals is found.

The fourth treatment is executed in the so-called "Indirect Analysis," * as follows: To find the weight of the potassium, multiply the weight of the two metals with 2·5416 (the quotient of the division from the equivalent of sodium into the equivalent of chloride of sodium), subtract the product from the weight of the two chlorides, and divide the remainder by 0·6355 (the difference between 2·5416 and 1·9061 [the quotient of the division from the equivalent of potassium into the equivalent of chloride of potassium.])

To find the weight of the sodium, multiply the weight of the two metals by 1·9061, subtract the weight of the two chlorides from the product and divide the remainder by 0·6355.

EXAMPLE.

		Grams.
The weight of the two chlorides is	=	0·902
" " " metals is	=	0·442

$$\text{As } K = \frac{0{\cdot}902 - (0{\cdot}442 \times 2{\cdot}5416)}{-0{\cdot}6355} = 0{\cdot}348 \text{ grams.}$$

$$Na = \frac{(0{\cdot}442 \times 1{\cdot}9061) - 0{\cdot}902}{0{\cdot}6355} = 0{\cdot}094 \text{ grams.}$$

Sodium and potassium are next to be converted into potassa and soda after the proportions:

for KO 490 : 590 = 0·348 : × × = 0·419
" NaO 288 : 388 = 0·094 : × × = 0·127

B. The part insoluble in water.

(*a.*) Estimation of the insoluble silica. Cover that part of potash, which was not dissolved by the water, in a retort with HCl (sp. gr. 1·12), any effervescence thereby caused indicates carbonate of calcium,

* *See* theory of this calculation in "Frickhinger's Katechismus der Stœchiometrie."

or of magnesium, or both. Digest for a few hours, filter, wash contents of the filter, heat to redness, weigh and add it to the silica obtained by A, d.

MEMORANDUM,—The insoluble part of silica possibly might contain a silicate; to determine this it must be decomposed by an alkaline carbonate.

(*b.*) Estimation of alumina and ferric oxide. Precipitate the nitric acid solution with ammonia, treat the lixiviated precipitate with hot liquor potassæ, whereby the ferric oxide precipitates, leaving the aluminium oxide in solution, which is then precipitated with ammonia from the potassa solution (previously saturated with HCl). After heating and weighing the ferric oxide, it is tested for manganese, by melting on platinum with soda, which acquires a green color if manganese be present.

Determining Lime and Magnesia: Precipitate the lime with oxalate of ammonium and the magnesia with phosphate of sodium, from the filtrate remaining after precipitating the aluminium and ferric oxides.

Lastly, all the obtained weights are brought up to 100 grams potash, in such a manner that silica, alumina, ferric and manganese oxides are calculated as such; lime and magnesia as carbonates, soda and potassa as phosphates, sulphates and chlorides and the rest as carbonates. If the potash was found to contain soda, then this alkali is dealt first as to the phosphoric acid (as $3NaO+PO_5$), then sulphuric acid and chlorine, and only if insufficient for these, the potassa is used in calculation.

Possibly potash might contain the following constituents:

Carbonates of potassium, sodium, calcium and magnesium, chlorides of potassium and sodium, phosphates of potassium or sodium, sulphates of potassium and sodium, oxides of iron, marganese and aluminum, besides water and silica.

ON THE UTILIZATION OF OLD CORKS.

BY J. B. MOORE.

In the conduct of every business there is much that may be saved by economy in little things, and there is no business where economy is so necessary, or where it may be practiced to greater advantage than in that of the pharmacist.

There are so many ways in his business in which waste and loss may

be sustained, unless a watchful eye and a close surveillance be kept over every little detail.

I purpose in this paper to offer a few hints, in a brief way, upon the subject of economy in corks.

There is in every drug store a vast quantity of corks which, being soiled through use, are daily thrown away; these might be saved, and, by the proper treatment, be reclaimed and utilized.

Old citrate corks, old prescription corks, and, in fact, old corks of every description, are constantly coming into the hands of the pharmacist, and are often cast aside.

To prevent this waste I here present the plan which for some time I have adopted.

I have a drawer behind my dispensing counter, in which are thrown all old corks that are unfit to replace in bottles, rejecting, of course, all corks taken from bottles that have contained substances of a greasy nature or of unpleasant odor, and after a sufficient number have accumulated I put them into hot water, soak them for twenty-four hours, and then wash them well with several portions of clean water, place them in a salt mouth bottle or other suitable vessel, and pour upon them sufficient of a mixture consisting of one part of muriatic acid and fifteen parts of hot water. They should then be set aside and allowed to stand in this mixture for a few hours, with occasional agitation. They should then be removed from the liquid, thoroughly washed in clean water, and put away to dry, when they will be found to be almost as white and fresh-looking as though they had never been used. Those which are sound and unbroken may be picked out, and will be found good enough to use for almost any purpose. The rest may be selected according to quality and appearance, and used for such purposes as the judgment of the pharmacist may dictate. The worst can be placed in bottles which are used for small sales, and will obviate the use of new corks. Some that are broken, and present a ragged or rough surface, may be trimmed off and improved very much in appearance by the judicious use of a sharp knife.

I would here state that corks that have been taken from bottles which have contained poisonous substances should not be saved for subjection to this process; although I think that the thorough washing and the soaking in the acid mixture would so thoroughly cleanse and purify them as to generally free them from all ordinary poisonous contamination.

As an objection to this plan of treating and reviving corks, it may be urged that there may be a minute portion of muriatic acid left remaining in the corks, which might render them unfit for use for many purposes, but this is not the case. The acid contamination is so slight as to be of little consequence, not sufficient to be objectionable for all the purposes for which such corks would be likely to be used. Of course, no pharmacist would think of using any but new and perfectly pure and clean corks for all delicate solutions, such as nitrate of silver, &c.

Muriatic acid, properly diluted, forms an excellent bleaching substance, and the pharmacist may avail himself of its use with advantage for many purposes. There is no better or more convenient article for removing stains from the hands and from mortars than this acid.

The store towels, which so often become stained, and present a very untidy and unsightly appearance even after they have been washed, may be greatly improved, if not entirely restored to their original color, by immersing them for a few minutes, after they have been thoroughly washed, in a mixture of one part of muriatic acid to nineteen parts of boiling water, and then thoroughly rinsing them in clean water.

Philadelphia, Pa., Sept., 1875.

VARIETIES.

THE PHARMACEUTICAL EXHIBITION IN BOSTON. By A. W. Miller, M. D.—The twenty-third meeting of the American Pharmaceutical Association, in Boston, was graced by a superb exhibition of drugs, chemicals, pharmaceutical products and druggists' sundries, which was quite worthy of being regarded as an appropriate prelude to that which we have a right to expect at the approaching Centennial. By universal consent this was the most brilliant and instructive display that we have so far had of these articles. Our Boston friends had planned everything so carefully, and had provided all the requisites and adjuncts necessary or even desirable to enrich the splendors of the display in so liberal and pains-taking a manner, that the whole affair passed off as smoothly and harmoniously as if it had been devised by eminent military talent. The committee in charge of the exhibition richly deserve the warmest thanks for their most admirable arrangements, and the thorough and systematic manner in which they executed the arduous labors imposed upon them.

The exhibition was held in Encampment Hall, located in one of the upper stories of the new and beautiful Odd Fellows' Building. Although the dimensions of this hall are quite respectable, it was found to be insufficient, so that a large proportion of the goods had to be arranged in the corridor leading to it. Encampment Hall

is abundantly supplied with light, it has sufficient height and its interior decorations are very handsome and attractive.

The local committee had prepared an admirable catalogue of exhibitors and of goods exhibited, accompanied by a diagrammatic plan of the hall, with references showing clearly the space assigned to each party. This publication proved to be extremely useful alike to the visiting members, to the reporters of the daily press, and, above all, to the committee appointed to report on the exhibition. The latter gentlemen are particularly deserving of this aid, as, on account of the profusion of objects displayed and the great number of exhibitors, their own task will prove to be no sinecure.

Where everything was so near perfection, it may seem almost invidious to criticize at all. Still we cannot forbear to draw attention to the fact, that imported patent medicines are no more orthodox than our domestic nostrums, and that they are, in fact, excluded from the exhibitions by special resolution passed at the preceding meeting. Most probably the few which we noticed had escaped the vigilance of the committee, and possibly the exhibitor was unaware of the position of the Association toward these preparations.

The official catalogue makes a practical and convenient division of the goods exhibited into the following six classes:

1. Drugs. 2. Pharmaceutical Preparations. 3. Chemicals. 4. Perfumery and Druggists' Sundries. 5. Apparatus and Shop Furniture. 6. Scientific Collections. Wines and liquors were very properly entirely excluded from exhibition, though by special permission, a few samples of alcohol, distilled by C. H. Graves & Sons, of Boston, were admitted.

The catalogue before us enumerates 114 exhibitors in the various classes named above. The majority of these have repeatedly shown their wares on previous occasions, and have thus become more or less familiar to the readers of the Journal. We will, therefore, attempt merely to mention a very few of those displays which impressed us as being novel or otherwise specially worthy of notice.

On entering the hall the attention of the observer was first attracted to a handsome perfume fountain, furnished by Joseph Burnett, which occupied a central and prominent position. It was richly decorated with ornamental foliage and fragrant flowers, which were daily replenished, and therefore always presented a fresh and beautiful appearance. Mr. Burnett also exhibited a rare specimen of a living vanilla plant and three oil paintings depicting the vanilla in various stages of its growth in its native forests. Through the courtesy of the same gentleman we were shown a sample of coniferin or artificial vanillin, which is now manufactured in Germany from the sap of pine-trees. We failed, however, in recognizing its identity in perfume or fragrance with that of the true Mexican vanilla, as it seemed to be more nearly related to the Bourbon variety, which is used much more extensively in Europe than with us.

Carter, Harris & Hawley, Cheney, Myrick, Hobbs & Co., Cutler Bros. & Co., and Weeks & Potter, all of Boston, made a very creditable and extensive exhibition of drugs in original packages, many of which are rarely seen by pharmacists. Kurlbaum & Co., of Philadelphia, displayed beautiful discs of camphor, refined by themselves. Lazell, Marsh & Gardiner, Lehn & Fink, McKesson & Robbins and W. H. Schieffelin & Co., all of New York, exhibited extensive collections of

materia medica specimens, many of which were subsequently presented to the Massachusetts College of Pharmacy. Among the novelties, we noticed Boldo, Guaco, Damiana, Pernambuco and Paraguay Jaborandi, pyriform Guarana and others. Mr. Lehn informed us, in regard to the specimen of the mystical damiana, that it had been imported by his firm direct from Mexico, but that their correspondents termed it *daminia*. Weeks & Potter also exhibited a glass case well filled with the rare and costly ambergris, worth rather more than its weight in gold. One lump of enormous size was specially admired, though its appearance was not prepossessing. Mr. Potter stated the total value of the case to be over $15,000. It had been obtained direct from the whaling captains, who bring it into New Bedford along with their other spoils. B. O. & G. C. Wilson almost superseded themselves in the beauty, variety and perfection of their botanical drugs.

Keasby & Mattison displayed their elegant effervescent preparations and gelatin-coated pills in a very attractive and tasteful manner. Mellor & Rittenhouse's *home-made* extract of licorice and licorice lozenges met with general approval and just praise. James R. Mercein, of Jersey City, presented a line of elegant pharmaceutical preparations. Southall Bros. & Barclay exhibited students' cabinets of Materia Medica specimens, a new and commendable feature. The entire collection of 157 specimens officinal in the British Pharmacopœia, is advertised to sell in England at 30 shillings, including a neat wooden box containing it. Each specimen bears a label giving the Latin and English names, a description of the source whence the article is derived, its natural order, character and tests, dose, and the name of the officinal preparations into which its enters. James G. Steele, of San Francisco, presented the *Grindelia robusta* and its preparations, the new antidote for the poisoning of *Rhus toxicodendron*.

Prof. James F. Babcock exhibited a few chemicals made by his improved methods and a sample of very superior refined neats-foot oil, which was as clear and light colored as the best castor oil. Prof. Geo. F. H. Markoe exhibited phosphoric acid, the preparation of which was detailed in an able and instructive essay read by him before the Association. Powers & Weightman had prepared a very extensive and valuable display of their fine chemicals, which occupied a prominent and conspicuous position near the entrance. The collection was admired as much for its beauty, as for its high intrinsic value, which was stated to be over $17,000.

The class of perfumery and sundries was particularly well represented by quite a large number of exhibitors, who had taken great pains to display their choicest productions to the very best advantage. To the non-professional visitor, this was perhaps the most inviting portion of the exhibition, particularly as samples of perfumes were lavishly offered to those that desired them.

The class of apparatus and shop furniture was made to include rubber goods, druggists' boxes of metal, paper and wood, scales, drug mills, herb-cutters, soda water fixtures, medicine chests, stills, percolators, syringes, druggists' glassware, microscopes, bandages and surgical instruments, most of which were shown in great variety and embracing many novelties. It was a universal source of regret among the visiting members, that there was not sufficient time at their disposal to examine the great number of highly meritorious articles with as much care and attention as they were entitled to. A. M. Knowlson, of Troy, N. Y., exhibited the operation of an apparatus for making suppositories by compression and without the application

of heat. Dr. Pile's collection of hydrometers and specific gravity bottles was much admired.

Prof. Babcock exhibited a valuable collection of chemical and pharmaceutical books and a large assortment of scientific journals. Chas. A. Heinitsh, of Lancaster, presented an interesting collection of nickel ores Robert R. Kent, of Boston, brought out a druggist's sign on copper that had done good service 100 years ago, together with some other ancient relics. The Massachusetts College of Pharmacy also displayed some venerable remnants of by-gone days, in the shape of old mortars, syrup-jars, etc One entire side of the hall was occupied by a highly interesting and instructive exhibition of living medicinal plants, which was well worthy of careful study, and, in reality, deserved very much more attention than it received.

The collection of Materia Medica specimens presented by Lazell, Marsh & Gardiner had been personally prepared by Prof. P. W. Bedford, and possessed more than ordinary interest. The total value of all the goods on exhibition was variously stated between $200,000 and $300,000, a fact that seemed to draw forth from the daily papers numerous flattering comparisons between Shakespeare's apothecary and the pharmacist of to-day. The Exhibition Committee neatly and forcibly expressed the same idea, by prominently displaying the following quotation from Romeo and Juliet:

> "I do remember an apothecary,—
> And hereabouts he dwells,— . . . .
> And in his needy shop a tortoise hung,
> An alligator stuff'd, and other skins
> Of ill-shaped fishes; and about his shelves
> A beggarly account of empty boxes,
> Green earthen pots, bladders and musty seeds,
> Remnants of packthread and old cakes of roses,
> Were thinly scattered to make up a show. . . . .
> And if a man did need a poison now . . . .
> Here lives a caitiff wretch would sell it him."

While in opposition to it there was the quiet and modest observation:

> "Tempora mutantur, et nos mutamur in illis."

Essential Oil of Achillea Ageratum. By S. de Luca.—This plant gives out an aromatic camphorous odor when rubbed between the hands, and if distilled in a current of steam, furnishes an essential oil. The largest yield is obtained about the month of May, before the plant blossoms. The essential oil, which has a density of 0·849 at 24°, does not sensibly absorb oxygen when confined over mercury along with the gas, even in presence of platinum black. The portion which distils between 165° and 170° remains liquid at a temperature of — 18°, even when exposed to it for four hours. The fraction which comes over between 180° and 182° gave by analysis results corresponding with the formula $C_{26}H_{44}O_3$.—*Journ. Chem. Soc.* [Lond.], from *Ann. Chim. Phys.* [5], iv, 132–134.

Salicylic Acid as a Disinfectant. By W. Wagner.—As the results of experience, Wagner asserts that—(1.) Salicylic acid is superior to phenol as a disinfectant for both fresh wounds and old sores. (2.) A disinfecting action is insufficient for venereal sores, and corrosion is requisite. (3) In eczema of the head and face, with discharge, salicylic acid is extraordinarily efficacious, presumably

because it quickly destroys the contagion. (4.) In all cases where fermentative changes occur in the contents of the alimentary canal, salicylic acid acts more efficaciously than other antiseptic substances, since it can be administered in larger doses. (5). Its use is highly promising as a prophylactic in all diseases in which it is believed that the morbid processes are connected with microscopic organisms. In diphtheria not only is salicylic acid a powerful restorative remedy, but it also appears to shorten the course of the disease.—*Journ. Chem. Soc.* [Lond.], Aug., 1875, from *J. pr. Chem.* [2], xi, 57–63.

AMYLOGEN, OR SOLUBLE STARCH. By L. Bondonneau.—Amylogen, whether prepared by dilute acids or alkalies, or by water under pressure, always possesses the same chemical properties by desiccation. It becomes translucid with conchoïdal fracture and completely insoluble in both cold and boiling water; but when mechanically divided with a fine file, it is largely dissolved by water; it is always soluble, more or less rapidly according to its state of cohesion, in soda and zinc chloride. The effect of cohesion may be clearly seen in amylogen prepared with soda. If carefully precipitated by alcohol, it is soluble in a small quantity of water; but if the precipitate be simply compressed between the fingers, it becomes almost insoluble. Amylogen is so perfect a colloid, that it may be considered as a type.

The starch granule is made up of concentric layers separated from each other by a cellular membrane. When this membrane is broken up by soda, &c., the starch coming in direct contact with water, dissolves therein.—*Journ. Chem. Soc.* [Lond.], July, 1875, from *Comp. rend.*, lxxx, 671.

ON THE SO-CALLED CHLORINE HYDRATE. By C. Göpner.—Chlorine hydrate, $Cl_2+10\ H_2O$, may also be regarded as $HOCl + HCl + 9H_2O$. If the first of these formulæ were the true one, the substance would give, on treatment with mercury, only mercurous chloride; but, as a matter of fact, it gives chiefly mercuric chloride. A small amount of the mercuric chloride is reduced by the excess of mercury to mercurous chloride. The molecular arrangement of the hypochlorous and hydrochloric acids might possibly be arrived at by treating the chlorine hydrate with organic bodies. Chlorine at 0°, therefore, decomposes water in the same way as the alkaline hydrates:—

$$Cl_2 + HOH = HCl + HOCl$$
$$Cl_2 + K_2O + H_2O = KCl + KOCl + H_2O.$$

—*Jour. Chem. Soc.*, Aug. 1875, from *Deut. Chem. Ges. Ber.*, viii 287.

ON THE CONSTITUTION OF CHLORINE HYDRATE. By Hugo Schiff.—The theory that chlorine hydrate, $(Cl_2HO + 10H_2O)$, may be represented by $ClHO + HCl + 9H_2O$, having been wrongfully attributed to the author, he denies having originated it, and then proceeds to give an historical sketch of the theory. Afterwards he brings forward facts to prove that in all probability chlorine is not present as hypochlorous acid; a concentrated hypochlorous acid solution is quickly decomposed by diffused light, whereas the hydrate which contains nearly the same amount of chlorine remains unaltered. The hydrate does not discolor the epidermis, which it should do if hypochlorous acid were present. Neither HClO nor HCl alone forms

a hydrate, and therefore they cannot be present as such unaltered. There remain but two facts which are in favor of the theory, namely, that the crystals have a much fainter smell of chlorine, considering the large amount present, than saturated chlorine-water; but this may be due to the low tension of the chlorine present. Lastly, the crystals are but very faintly colored; this, supposing that water is present as crystalline water, is as yet inexplicable.

—*Jour. Chem. Soc*, Aug. 1875, from *Deut. Chem. Ges. Ber.*, viii, 419—421.

WEIGHING OPIUM.—A correspondent in Smyrna has kindly furnished a sketch, showing the primitive manner in which opium is weighed there. This we have had engraved, thinking that it might be of interest to our members. It shows the form of the "*Cantar*," or steelyards, which is suspended from a pole, resting on the shoulders of two porters.

Any movement of either of these porters, at the moment of weighing, will alter it, and, therefore, the greatest care is necessary. The "*Cantar*" is divided by notches on the upper angle, into Okes and fractions of Okes of Constantinople.

Regarding the weight of a Chequî, I have to inform you that there is no such *actual* weight; it is only a nominal weight arrived at by calculation. [NOTE.—In quoting Opium, say for example—130 P., we mean 130 Piasters per Chequi, fo

Current quality Opium.] Formerly the Smyrna *kintal* was used—for buying and selling merchandise—divided into 45 okes. One kintal weighed 120 pounds avoirdupois, consequently 1 oke weighed 2⅔ pounds. An oke was considered to be 400 drams (although the Smyrna Oke was only 380 drams) and 250 drams were considered as 1 chequi.

At present Opium and other merchandise is *weighed* by the Constantinople oke, but opium is *sold* by the chequi. The mode of calculation is this, in buying Opium in Smyrna:

Say net Okes of Constantinople 100, add 5 per cent. difference between Constantinople and Smyrna = 5 to be added, or 105 okes × 400 drams ÷ 250 drams = 168 chequis.

The oke of Constantinople you will find to be about 2 75-100ths pounds avoirdupois, which would make the Smyrna Chequi equivalent to 1 63-100ths @ 1 64-100ths pounds. Ogden's Tariff is probably very nearly correct, while Heyl's, I imagine, is based on Constantinople weights, actual, without the addition of five per cent.

In almost every town in Turkey, weights and measures vary. The Turkish government passed a law establishing all weights and measures throughout the Empire obligatory, in accordance with the decimal system in France. This law was to take effect some two years since, but up to this time nothing more has been heard of it—a dead letter, like most all attempts of Turkish reforms.—*Circular No* 31 *Philadelphia Drug Exchange.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE DANISH APOTHECARIES' ASSOCIATION, which now numbers 148 members, Mr. Lotze, President, held its annual meeting on July 5th and 6th, at Vejle. Mr. Madsen, Delegate of the Association to the International Pharmaceutical Congress at St. Petersburg, made his report and stated that the Congress, not being satisfied with the French (Mr. Méhu's) draught of an International Pharmacopœia, had divided the work among its members. All these reports have now been sent to a committee in St. Petersburg, which revises and prints them, when they will be sent to the various Pharmaceutical Associations represented at the Congress, to criticize and report upon. When this is done the Russian Government will invite to a new Congress with a view to a final adoption of the International Pharmacopœia. Mr. Madsen had to report on tinctures and syrups, and among other things paid particular attention to whether digestion or maceration was to be preferred; he found that (especially for tinctures of opium) maceration was the best.

Mr. Piper, in experimenting with glycerolatum ipecacuanhæ, confirmed the statement of Professor Dragendorff, that about three-fourths of the emetia is extracted by infusion in the ordinary way, but he thought that it would be possible to obtain all the emetia in solution. The President, Mr. Lotze, opened a discussion on the use of cultivated medicinal plants, owing to the increasing scarcity of wild-growing ones. It was thought to be admissible for all plants but the narcotics. In this connection it was mentioned that the Swedish Pharmacopœia permits the use of cultivated belladonna.

Mr. Piper called attention to the propriety of providing solutions of atropia (and incidentally medicines containing poisons) with a poison or otherwise cautionary label. Referred to conference with the Board of Health.

Swiss Apothecaries' Society.—The thirty-first annual meeting was held in the city of Berne, August 11th and 12th, President Professor Buttin, of Lausanne, in the chair, Mr. W. Mueller, of Zurich, Secretary. After the opening address by the President, Vice-president Schaer welcomed the delegates present from the German Apothecaries' Society, Dr. Schacht, of Berlin, and Dr. Leube, of Ulm, who, in responding, extended an invitation to visit the meeting of the German Association, Professor Perrenoud subsequently being elected delegate for this purpose.

Milk assays formed the subject of a discourse by Dr. Mueller; volatile oils and some of their derivatives, by Professor Perrenoud; apparatus for the dispensing of powders in wafer capsules, by Mr. W. Mueller; and the stability of chloral-chloroform, by Dr. Schacht; the latter pointing out the danger attending the use of this compound for anæsthetic purposes. A printed report of the council embracing propositions relating to the examination, the rights and duties of apothecaries under the new Federal Constitution of Switzerland, was then discussed; also the supplement to the Swiss Pharmacopœia, the German text of which was completed, the Latin translation being expected to be finished in a few months. The letter from the Philadelphia College of Pharmacy (see page 375 of our August Number) was read, accepted with thanks, and a German and French translation of it ordered to be published in the "Swiss Pharmaceutical Weekly."

Seventeen new members were balloted for; Neufchatel was selected for holding the next annual meeting, and the following officers were elected for the ensuing year: President, Professor E. Schaer, of Zurich; Vice-president, Professor L. Buttin, of Lausanne; Secretary and Treasurer, Mr. B. Studer, Jr., of Berne.

EDITORIAL DEPARTMENT.

The Twenty-third Annual Meeting of the American Pharmaceutical Association is over, and its records will soon be open for the inspection of all. To say that it was a success is hardly sufficient to do justice to the admirable arrangements made by the Local Committee in conjunction with the Local Secretary, Mr. S. A. D. Sheppard, all of whom have done their utmost by incessant labor both before and during the progress of the meeting, to make it a memorable one in the history of the Association, not merely through the lavishness with which money was expended, but for the almost perfection with which even the details of the various arrangements had been previously considered, leaving little to be desired except in point of time.

The visiting members commenced to arrive Sunday, September 4th, when the steamer William Crane landed a party from Baltimore and Virginia. The steamer Norman, which reached her wharf at Boston on Monday forenoon, brought a large

party from Philadelphia and vicinity, and on Tuesday morning the train from Fall River brought the many members and their families who had taken the steamer at New York on the preceding evening, while the railroads from other sections concentrating in Boston, carried considerable numbers. The Western States were not as well represented as had been hoped, because many, as we were informed, had postponed their trip to the Atlantic States until next year, when the meeting of the Association in Philadelphia will at the same time afford an opportunity to visit the International Exposition.

The attendance at this meeting was more than double the number of any previous occasion, Boston and vicinity being, as a matter of course, well represented; but the visitors were unusually numerous, and it was particularly noteworthy that a fair number of pharmacists were present from the States south of the Ohio and Potomac rivers, some having come even from the Gulf States. With a single exception, all Committees from whom reports could be expected were prepared to report; and though the acceptors of queries did not respond in the same degree, yet the number of essays presented (45) was much larger than at any previous meeting, many of them possessing considerable scientific or practical interest.

Less time, we think, was consumed upon purely technical points than at many previous meetings; but the large amount of work before the Association appeared to interfere also with the discussions of the subjects introduced by the reading of the essays, many of which deserved a much fuller notice by the members present than was or could be accorded to them; and, even with these limited discussions, it became necessary to read nine essays merely by title, and refer them to the Executive Committee. Guided by the experience of former years, Mr. Colcord had proposed last year to prolong this year's meeting for several days, and several members expressed themselves in favor of the proposition, and of not hurrying over the papers read. The Association has, in former years, repeatedly held seven and even eight sessions at an annual meeting, without having been by courtesy compelled to adjourn at specified hours, to avoid coming into conflict with the local arrangements. The limit in the duration of each session and in the number of sessions, as previously laid out by the Local Committee, necessitated a contraction of many subjects into the least possible space of time, and as a consequence thereof it is not to be wondered that some business needing attention was crowded out or overlooked. Limited time cannot well be pleaded next year, when every attendant at the meeting of the Association may naturally be expected to be desirous of visiting also the Centennial Exposition. To harmonize these various interests will be one of the most important questions to be discussed by the Committee of Arrangements, acting in conjunction with any local committee that may be appointed; and, as a result, we may expect that the sessions hereafter will not be limited either in number or in hours, but that they must depend on the importance of and the interest attached to the questions brought before the Association.

THE ENTERTAINMENTS AT THE BOSTON MEETING were of a character that their recollection will be long cherished by those who were forunate enough to participate. On the evening of September 7th, a reception was tendered to the visiting members and their ladies by the pharmacists and druggists of Boston and vicinity. About 400 persons were assembled in the parlors of the St. James Hotel, the head-

quarters of the visiting members. Hon. Mr. Cobb, Mayor of Boston, was present, while His Excellency Governor Gaston was prevented from attending. The Germania band was stationed in the corridor, entertaining those assembled with excellent music. After spending several hours in promenading and social intercourse, the party repaired, shortly before 11 o'clock, to the spacious and handsomely-decorated dining-hall, and sat down to a sumptuous repast, after the visitors had been formally welcomed by Mr. Joseph Burnett, Chairman of the Local Committee, in a neat speech, to which President Diehl responded on behalf of the guests. At a late hour the company dispersed.

On Wednesday, at 9½ o'clock, the visiting ladies started from the St. James Hotel for a visit to various places of interest in the suburbs of Boston, a lady resident of Boston accompanying each carriage. After a visit to Jamaica Pond, the party was handsomely received and entertained at the residence of Mr. Jos. T. Brown, and left then for the Chestnut Hill reservoir, the residence of Mr. Alvin Adams, and Fresh Pond, where they were received with music from the Germania Orchestra. Dinner was served here, and afterwards a visit paid to Mount Auburn and Bunker Hill, and on returning the party passed through the district which was burned down some time ago.

The members of the Association, after the close of the second session, proceeded to the banqueting-hall in the Odd Fellows' building, where dinner was served for them, after which Dr. T. L. Jenks, Vice-Chairman of the Local Committee, arose and introduced several members, who responded with some remarks. This portion of the entertainment was repeated on the following day (Thursday), when the repast provided was in the official programme denominated a collation, which, however, was quite satisfactory as a good dinner. These dinners, in the same building where the sessions were held, served to keep the members together, and enabled the presiding officer to open the next session promptly and with a full complement of members.

On Wednesday evening a considerable portion of the extensive Odd Fellows' building was taken possession of and a brilliant levee given in Arcan's Hall, supper being served in the banqueting-hall. With promenading and dancing to the music discoursed by the Germania Orchestra, and with visits to the exhibition-hall, the hours glided swiftly by, and after midnight the company gradually withdrew.

Thursday was devoted by the ladies to take a look at the city of Boston; the navy-yard, the music-hall (with its large organ), Bunker Hill Monument, the State-house, Common, Public Garden, and many other institutions being inspected during the day; while the evening found most of the members and ladies at the Boston Theatre, to witness Mr. Chanfrau in his representation of "Kit, the Kansas Traveler," in response to the invitation of Orlando Tompkins, Esq. Many members visited, also, the rooms of the Orpheus Singing Society, and spent here a few hours in pleasant company.

The closing entertainment was the harbor excursion, on Friday afternoon. In a violent rain-storm the commodious steamer Governor Andrew left her wharf, and, after a circuitous trip past various points of interest, landed the party at Downers' landing, where a clam-bake was served, accompanied by clam-chowder and other New England delicacies, which we could not enjoy in the interesting company of about 600 ladies and gentlemen. Having been left behind, our friend Jas. H. Slade

promptly volunteered to convey us to the landing in his yacht, and, the sky clearing, we arrived, after a splendid sail, in time to participate in the enjoyments and become a listener to the speeches delivered on the homeward trip, upon the call of the Chairman, Mr. Jos. Burnett. As the boat neared her wharf, many a farewell was uttered with deep regret, and the parting salutations were mingled with expressions of hope to meet again in Philadelphia in 1876.

THE EXCURSION TRIP TO THE WHITE MOUNTAINS, after the close of the twenty-third meeting of the American Pharmaceutical Association was planned by Mr. Sheppard very judiciously so as to afford all an opportunity to visit the picturesque mountains of New Hampshire, spending either two or three days, or more if so inclined. A special car carried about sixty ladies and gentlemen on Saturday morning from Boston to North Conway, where dinner was served. Commodious stage coaches carried the party from here to the Glen House, beautifully located at the foot of Mount Washington, where, on the following morning, Glen Ellis Falls, the Garnet Pool and other interesting points were visited. The ascent of Mount Washington, towering 6,288 feet above the level of the sea, was of unusual interest. Starting from a valley where an agreeable temperature prevailed, the road passed through dense forests, in which the needle-shaped leaves of the pines and firs gradually became more predominating. By and by the coniferæ dwindled down to insignificant shrubs, and afterwards left mosses and lichens to adorn the otherwise bare rocks. The change in temperature was now thoroughly felt, and ice appeared in the little rivulets and ditches by the roadside, the wind blowing at the rate of forty miles an hour. The arrival at the Mount Washington Summit House afforded secure shelter from the chilly temperature.

Gradually the top of the mountain became enveloped by passing clouds, which settling deeper in the valley beneath, again left the surrounding peaks bare, so that in the bright moonlight, a seemingly boundless view upon an endless sea of clouds, about 1,500 feet beneath was afforded, while occasionally a passing cloud covered the moon, surrounding her for the moment with a circle of the bright colors of the rainbow.

The descent was made on Monday morning by the Mount Washington Railway, through thick clouds; but after the base was reached the journey was continued by stages, the weather becoming clear, past the Ammonoosuc Falls and Fabyan's to the Crawford House, situated in a pleasant valley in the immediate neighborhood of the gate of the White Mountain Notch, from which Idlewild, the Willey House, Mount Willard, with Hitchcock's Flume, several picturesque cascades, and curious rock formations were visited. Here the company separated, one party passing through the Franconia Mountains to Lake Winnipiseogee, while the other returned by rail *via* North Conway to Boston, many meeting again on board the Fall River boat on their trip to New York and homeward.

A party of ten spent some days on the Isles of Shoals, while others extended their journey to Lake George, the Hudson River or Niagara Falls.

DR PANCOAST'S TONIC TINCTURE.—Under this name a preparation is prescribed

in some parts of the United States, for which a correspondent in Georgia desires to obtain the formula. Mr. Jas. T. Shinn has furnished us with the following:

℞.	Cort. cinchonæ,		℥i
	Cort. aurantii,		
	Flor. anthemid	*aa*	℥ss
	Fol. artemisiæ absinth.,		
	Fruct. carui,	*aa*	℥ii
	Spt. vini gall.,		Oi
Ft. tinct.			

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Beiträge zur mechanischen Wärmetheorie. Von Baron N. Dellingshausen. Heidelberg: Carl Winter's Universitäts-Buchhandlung. 1874. 8vo, pp. 120.

Contributions to the Mechanical Theory of Heat.

This is the continuation of a work, entitled "Principles of a Vibration Theory of Nature," published by the author a few years ago, and in which the physical differences of bodies were explained by motion, disregarding the theories of atoms, molecular forces and imponderables. The present work enters more specially into the subject, and attempts to furnish mathematical proofs in four essays, entitled "Mathematical Proof of the Vibratory (undulatory) Theory of Heat;" "The Internal Movements and their Influences upon the State of Aggregation of Bodies;" "Heat, an Internal Vital Force of Bodies," and "The Chemical Heat of Bodies."

The subject having of late years attracted the attention of physicists, these "Contributions" will be found to be a valuable addition to the literature of physical science.

The Mechanical Action of Light. By William Crookes, F. R. S., &c. London: 1875. 8vo, pp. 16.

This reprint from the July number of the "Quarterly Journal of Science" contains an account of the experiments made by the author, with the view of ascertaining the influence upon the motion of bodies contained in a vacuum, when exposed to the influence of light and heat, and which were the subject of a paper read before the Royal Society a year ago. The experiments revealed the fact that, under the circumstances stated, dark heat repels black and white bodies almost equally, but the rays of light repel black surfaces more energetically, and this mechanical action of radiation was found to be inversely proportional to the square of the distance of the light from the blackened surface. The influence of heat may be almost completely removed, by passing the rays through a plate of alum, so that the action of light alone may be accurately measured, by the number of revolutions, made by a light body (pith), properly suspended in the vacuum so as to cause the least possible friction when revolving. These are, briefly stated, the interesting observations upon which the construction and use of the author's *radiometer*, for measuring the intensity of light, are based.

Capillary Bronchitis of Adults. By Calvin Ellis, M. D.; Jackson Professor of Clinical Medicine in Havard University. New York: G. P. Putnam's Sons. 1875. 8vo, pp. 36. Price, 40 cents.

This is the seventh number of "A Series of Chemical Lectures," the publication of which we have announced on page 139 of our March number.

Plain Directions for Accidents, Emergencies and Poisons. 12mo, pp. 126.

Plain Directions for the Care of the Sick and Recipes for Sick People. 12mo, pp. 72.

These two pamphlets were written by a physician attached to the Howard Hospital and Infirmary, Philadelphia, and were originally distributed by this institution. The edition before us has been published by the Mutual Life Insurance Company, of New York, for distribution to its policy-holders.

A Report on the Hygiene of the United States Army, with Descriptions of Military Posts. Washington: Government Printing Office, 1875. 4to.

This volume is Circular No. 8, War Department, Surgeon-General's Office, which is published, by authority of the Secretary of War, for the information of officers of the Army. The first fifty-nine pages are occupied by the report on the hygiene, written by Assistant-Surgeon John S. Billings, U. S. A.; the remainder by descriptions of the military posts, together with sick reports, meteorological observations, &c., during the years 1870 to 1874. It is a most valuable addition to the excellent "Circulars" heretofore issued by the same office.

Die Schule des Physikers. Experimentell und mathematisch durchgeführte Versuche als Leitfaden bei den Arbeiten im physikalischen Laboratorium. Von Dr. Ludwig Külp. Heidelberg: Carl Winter's Universitäts-Buchhandlung. 1874. 8vo, pp. 624.

The School of the Physicist. Experimentally and mathematically solved problems, designed as a guide for the labors in the physical laboratory.

The necessity of *practical* instruction in the various disciplines is being more and more acknowledged, and the great usefulness of the chemical laboratories has led to a considerable increase in their number, and the establishment of new ones with most institutions aiming at a higher instruction. Among the natural sciences, the discipline of physics is usually more or less neglected, the instruction being mostly confined to lectures and lecture experiments; but the need of practical training is certainly not less than for chemistry. The want of suitable text-books for physical laboratory work has induced the author, who has an extended experience in this instruction, to prepare the volume now before us. One hundred and twenty-six larger problems are given in the first six parts, embracing mechanics, magnetism, galvanism, acoustics, optics and heat, to which a seventh part is added, containing thirty-eight additional problems. In each case the necessary apparatus are mentioned, preference being given to the simpler ones, after which the requisite experiments by different methods are described and the manner in which correct quantitative results are obtained. An appendix of about eighty pages contains brief instructions relating to the handling of apparatus, the performance of physical experiments, the graphic delineation, calculation and correction of results, &c. The work concludes with fourteen tables, which are valuable in the calculations or necessary in the correction of the results.

The work appears to us to be very well adapted not only for the immediate purpose for which it was written, but likewise to impart practical information in many cases of applied science, and as such it will be welcome to a large circle of readers.